Eat at least five servings of fruits and vegetables a day, use vegetables as the center of the meal.

Remember: do not eat foods boiled in oil, get good cold processed vegetable oils and thus good fatty acids, not trans or cooked animal oils. Eat only Levulose (fructose fruit sugars) not Dextrose (cane, corn, potato, grape sugar). Wellness is your Reward. Remember to chew your food, fruits alone, fluids alone, and melons alone.

Make vegetable and fruit juice part of your daily Wellness Healthy Regime.
# Table of Contents

## Sugars and Sweetness
- Low Glycemic Food List  
- The Glycemic Index of Selected Foods  

## Heart-healthy diet: 7 steps to prevent heart disease
1. Limit unhealthy fats and cholesterol  
2. Choose low-fat protein sources  
3. Eat more vegetables and fruits

## Best & Worst Foods for Your Cholesterol - Trans fat is the worst offender.
- The worsts  
- The bests  
- You Must Skip Cola (Even Diet)

## Never Have a Heart Attack
1. The sleep test  
2. The vitamin D test  
3. The finger test  

## Monosaccharides
- Glucose  
- Fructose  
- Galactose  
- Ribose

## Disaccharides
- Saccharose  
- Maltose  
- Lactose

## Polysaccharides

## Cellulose

## Starch

## Glycogen

## Literature

## References on Quantum Handedness

## References

## SUGAR: you just love your children to death
How Sugar Can Destroy Your Health and Cause Cancer, Diabetes, Neurological Disease and Vitamin/Mineral Deficiencies

## The Immune System- First of Two Parts

## Trans Fatty Acids and Cardiovascular Disease

## Healthy Heart - Avoid Trans Fat

## Fruitarian definition of fruit
Definition of fruitarian  
Scientific studies

## Sugar Wars
How You Can Win  
An Apple a day can help keep the doctor away  
SINthetic processing is the problem not natural fructose  
Use fruit for your sugars  
Now for some recipes on how to get your children into fruit for their sweet tooth  
Desi's Breakfast  
Fruit Juice - How Much Is Too Much?  
Articles on Fructose  
Fructose: Sweet, But Dangerous  
An apple a day  
Fructose digestion and absorption in humans  
References

## Glucose, Fructose and Sucrose: What's the Difference Between These Sugars ... and Which is the Worst for Your Health?
How Refined Fructose Impairs the Memory
The History of Medicine

2000 B.C.  Here, eat this root
Drinck this juice

1000 A.D.  That root is heathen
Here, say this prayer

1850 A.D.  That prayer is superstition
Here, drink this potion

1940 A.D.  That potion is snake oil
Here, swallow this pill

1985 A.D.  That pill is ineffective
Here, take this synthetic drug

2011 A.D.  That synthetic drug don’t work
Here, eat this root

Don’t eat synthetics, drink this juice
Say this prayer

Life is Left Handed

Quantum Nutrition is all about Handedness and Photons

Desire'
Delicious
Dubounet
Sugars and Sweetness

Many diseases are due to factors that are related to Big Sugar, Big Sugar for its corporate name. As people who get bad sugars and bad oils, trans-fatty acids and cooked oils. Factors of bad nutrition in America are making people sick, producing blood sugar problems, producing obesity, cardiovascular problems, and many, many things that the FDA could also affect. Limiting trans-fatty acids, making good sugars (Left handed Fructose), rather than bad sugars (right handed Dextrose).

The body needs right handed sugar (Blood Glucose) to enter the cell for energy. Right handed dextrose sugars such as sugar cane, beet sugar, grape sugar, corn sugar are right handed and they enter the cells too fast. This produces fat more easily, hyperglycemia (mild addiction) and then hypoglycemia (mild depression). This puts a burden on the pancreas and all other organs. There is also a well documented negative effect on the immune system from dextrose. If you use chemicals to strip away vitamins and minerals to make the sugar white, and it gets even worse.

Dextrose sugars are at the top of the Glycemic Index tables because they enter the blood stream and the cell so fast. Thus they are the main cause of obesity and all blood sugar disorders.

Fructose (levulose) revolves to the left and needs to be converted to the right. A process that takes time and thus allows for a more smooth delivery of the glucose. Less fat, less stress on organs, less craving, less depression, less blood sugar fluctuations. More hormonal and enzyme production thus it is an anti-aging therapy. Use fresh fruits as a sweetener; it will change your life.

Crazy food additives that have not been fully tested add to the food and drug problems. The synthetic foods and drugs have failed. Our society has learned to avoid and mistrust synthetic foods. We will not order them on a menu or buy them of the shelf. We have learned to be chemophobic. We know that synthetic foods create cancer and disease. Our society must learn that this is true of our medicines as well.

Our body needs good fatty acids. They make up the cell membrane of all of our cells. Stress sets them free. Cooking destroys most fatty acids. Meat and potatoes contain very little. In fact the fatty acids from an animal are saturated. Fresh and raw vegetable and unheated vegetable juice are the best source. Cooking oils destroys some of their nutritional value. Stress makes us fatty acid deficient. So fatty acid deficiency is the number one problem in the world of health care today.

People are made to be mostly vegetarian. Humans are not carnivores. But we are omnivores and some meat is good for the diet. Vegetarians will have to be careful and eat right and supplement to be healthy. As vegetarians we should mostly eat fruits and other foods that carry seeds. If we eat an apple, the apple tree does not die. In fact it wants us to eat its fruits and carry the seeds elsewhere. Fruits have no bad karma. Eating a cow has karma the cow must die. Eating a carrot has no bad karma. Eating a cow has bad karma the cow must die. But eating fruits have no bad karma.

We all have the instinct to like sweets for the reason to eat fruits (fructose). Our tongues are mainly proton detectors and sweet fruits the primary thing we crave for taste and health. But then came along the sugars from cane and other dextrose sugars that are problems for the body. The high glycemic foods with dextrose bring up blood sugar very fast we get addicted to the taste and the rush. And our sense of taste for fruit gets perverted to seek dextrose sugars. The high glycemic dextrose sugars drive out blood sugar way up, force the release of extra insulin, this makes the blood sugar go down and the cycle repeats. Immune-depression, neuronal-irritation, stress susceptibility, mood disorders and the cycle allows all other diseases and cancer a foothold.

---

**Downward Spiral**

Stress produces excess Cortisol, weakens adrenals, produces excess blood sugar, excess insulin, this makes you crave foods and eat more which increases blood sugar and insulin, which increase cortisol make you irritable and more sensitive to the next stressor.
Bad food is a problem in degenerative disease. And this is also another industry the FDA is not attacking that the FDA is not doing their job to protect the human beings of America. Big Sugar and cholesterol are leading to diseases that are killing over a million people a year.

"Well all we have to do is follow the candy and sugar holidays to sell our Flu shots and Drugs to the People. They will never believe that sugar weakens their immune systems. They believe what we tell them to believe."

Sweetness travels under a variety of aliases. Just check out the label of your favorite cereal or beverage and you’re likely to see the flavor show up many times, in the form of high-fructose corn syrup, dextrose, cane syrup, maple syrup, fructose, molasses, honey - and even agave, the latest caloric sweetener, which is derived from a plant native to Mexico. (These are all in addition, of course, to plain old table sugar, or dextrose sucrose.)

One study performed in 1973 showed that white blood cells from individuals who had consumed 100 grams of sugar (about 20 teaspoons) were less active. This study has been cited for many years as evidence that sugar suppresses the immune system, by no less than the famous pediatrician Dr. Sears.

You might also find some food labels or manufacturers hinting that their source of sweetness is more healthful than the others. Since the concept of “healthy” can be awfully fuzzy, let’s put it bluntly. “All of these are empty calories that offer you no relative nutrition,” says Dawn Jackson Blatner, a dietitian and spokesperson for the American Dietetic Association. That doesn’t mean they’re forbidden, just that they should be eaten in moderation, she says.

And many of us are not moderate in our consumption of added sugars. The World Health Organization recommends that we cap our intake at less than 10 percent of our day’s calories, yet the average American gets 400 calories a day from beverages, a lot of which come from sugar. (Many people, including obesity expert Barry Popkin, say one of the easiest ways to drop weight is to simply cut out all caloric beverages.) Assuming you take in 1,800 calories per day, a 10 percent
Extra high levels of dextrose in the blood will diminish white blood cells and thus weaken immunity, irritate nerves, weaken cell membranes, lessen healing repair, and over-all decrease health.

Limit translates to fewer than 180 calories, or 45 grams, of sugar daily. The real problem of dextrose versus fructose has not been really discussed because of the problem of the profits of Big Sugar, and their lobbyists.

So if you are following WHO’s guidance and eating a moderate amount of the sweet stuff, does it matter what form it takes? Some hypothesize that fructose, one of the components of sucrose, is a particularly bad kind of sugar. It may not suppress hunger or stimulate the natural feeling of fullness, says Kathleen Melanson, an assistant professor of food and nutrition at the University of Rhode Island in Kingston. And there is also a concern that when it’s consumed in very high amounts, fructose can’t be properly processed by the body, which translates to a fatty liver or raised levels of triglycerides in the blood. It can also lead to higher levels of uric acid, which some believe raises the risk of cardiovascular disease and diabetes, among other woes. So fructose cannot be used to excess either. Dilute the 100% natural juices you buy and use sugar sparingly even fructose.

But those hypotheses have not been proven, emphasizes Melanson, and there’s no take-home message for people in terms of the form of sugar they eat. Some mass production of white sucrose leaves less than 20% fructose. The mass de-naturalization of sugar is to remove the brown color and make it white. This was important over a hundred years ago as a social issue not a health issue. The use of mustard and nerve gases to strip away the minerals and nutrients that yield the color, all designed to make WHITE sugar, white Flour for a White biased society.

Sucrose is normally about 30% fructose and 70% glucose, while honey is about 40 to 45 percent fructose, and high-fructose corn syrup is about 55 percent. Unprocessed honey has lots of minerals and vitamins to support energy production. The amount of fructose in agave nectar can vary, with estimates starting at about 60 or 75 percent (some say it’s much higher, depending on the processing method). Fructose in the supermarket is still at best only 90% fructose.

There are tiny differences in the minerals in some sweeteners; the less processed, the more trace minerals, says Blatner. (Honey, for example, has some magnesium and calcium.) And there is some evidence that the levels of antioxidants in sweeteners can vary. One study, published earlier this year in the Journal of the American Dietetic Association, found that among sweeteners, dark and blackstrap molasses had the most antioxidant activity. Maple syrup, brown sugar, and honey had a bit less, and refined sugar, corn syrup, and agave nectar had the least.

Still, it usually comes down to personal taste and preference, Blatner says. Some find agave so sweet that they use much less of it, which can mean fewer calories. Others find the taste of molasses vile. It’s up to you. Importantly, you shouldn’t let any fructose worries scare you away from fruit; while it’s true that tree fruits and berries contain a large percentage of fructose, the absolute amount is quite low, Melanson says. And it comes packaged with plenty of fiber and nutrients, which is more you can say for your average sweetened cereal or drink. Use fruit to satisfy you sweet tooth.

The sweet tooth or sugar craving is most often a sign of some disease. A weak or clogged gall bladder will create this. A blood sugar imbalance will also make this craving. Addiction to the glycemic rush of white sugar is a factor. Nerve damage, intestinal parasites, psychological imbalance also can be the cause of aggravate. If you were lost in the desert for 3 days and just came out and someone
offered you an apple, you wouldn’t say “No, have you got a candy bar.” If the apple does not fit your hunger, you are not hungry you are addicted. Use fruit to satisfy you sweet tooth.

### Low Glycemic Food List

Low glycemic food is very important for the weight loss plans that you have been trying to work on. Check out the low glycemic food list given below.

The glycemic index of the food is the numerical index that categorizes the carbohydrates according to their response to the glucose from the human body. It scales from 0 to 100, the higher the GI (Glycemic Index) count, the higher is the blood sugar counts. Glycemic index is usually counted by feeding a fixed portion of food to the test subject after an overnight fast and then calculating the blood sugar counts. The GI count is the best method to lower the blood glucose levels as well as the body weight.

#### Low Glycemic Index

More than 80% patients of type 2 diabetes suffer from obesity and high cholesterol levels. Eating low Glycemic food is very helpful for the overall health of a person. It helps a person to control the body weight, increase the insulin resistance, lower the risk factors of heart diseases and Poly cystic Ovarian Syndrome (PCOS), maintain normal cholesterol levels, reduce craving for food, prolong physical endurance and retain the carbohydrate counts after a rigorous exercise.

However, it doesn’t mean that all the high glycemic foods must be avoided because those who are not suffering from diabetes, may need a rapid increase in the blood sugar levels. This is the reason why many physical trainers advice the players to have high GI food immediately after a tiring workout or any other physical activity. More on glycemic index food list.

Low glycemic diet plan is actually a diet plan that a person needs to follow at least for 28 days, which will help him/her maintain the proper blood glucose levels. Low glycemic index diet generally consists of proteins, low glycemic carbohydrates and omega-3 fatty acids. After following this diet plan for a month, the person can either switch to a balanced diet plan or continue with the same GI diet: low glycemic index foods. Is there any low glycemic food list that one can follow for better results? Yes, given below is a list of low glycemic index foods that you can refer in order to manage your daily diet.

Along with the proper ratio of the above mentioned low glycemic foods, one must also concentrate on a low carb diet that will be helpful to maintain the low glycemic index. Relatively less amount of oil, salad dressings, mayonnaise, fresh fruits and green vegetables, cereals and beans and low fat dairy items always top the low glycemic food list. One might also like to consider this glycemic index chart before opting for a healthy diet. Hope you found this article about low glycemic index food list, useful! Take care!

By Rutuja Jathar
Published: 9/18/2009
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Big Tobacco, Big Sugar, Big Pharma, Big Oil, and Big War Industry are exempt from lay and they kill and injure, maim and cripple in the name of profit. They seek to control and dominate medicine to further build their profits.

Their money controls governments, regulators, and the small minded media. The Ultra Rich Master Echelon Computer now sees and hears all the things we say, write, and do. Rights of privacy are gone worldwide. They have taken away our rights of free speech.

The Ultra Rich control the media and refuse to tell stories that expose or offend the Ultra Rich Power. They control every movie that gets distribution, every song that hits the radio, everything that is put on the world news. They use science and psychology to control and manipulate the minds of the masses.

But medicine is controlled by Universities that teach medicine. There is now one university starting to defend Natural Medicine. IMUNE has a new 12 month home study course that can bought with Karma and you can learn how to do natural medicine and how to break free from the Ultra Rich control.

Well, the game of Reality Monopoly is still being played all over the world. One percent of the world's population is winning and now controls over 80% of the wealth. The law allows the game to continue till we will see one winner and 6 billion plus losers.
<table>
<thead>
<tr>
<th>Glycemic Index of commonly consumed foods</th>
<th>Low Glycemic Index List</th>
</tr>
</thead>
<tbody>
<tr>
<td>Based on Glucose as a level of 100</td>
<td>These are the foods for a cancer diet, do not use cane or any dextrose sugar or honey. Do not use excess salt. Use fructose, spices and variety to give culinary flavor, and taste</td>
</tr>
<tr>
<td>85-100+ is considered high</td>
<td><strong>Avoid all above the line</strong></td>
</tr>
<tr>
<td>Maltose (as used in beer)</td>
<td><strong>Eat these below and the bottom ones mostly</strong></td>
</tr>
<tr>
<td>Glucose</td>
<td><strong>Peanuts</strong> 15</td>
</tr>
<tr>
<td>White bread</td>
<td><strong>Artichoke</strong> 15</td>
</tr>
<tr>
<td>Baked potatoes</td>
<td><strong>Asparagus</strong> 15</td>
</tr>
<tr>
<td>Carrots (cooked)</td>
<td><strong>Broccoli</strong> 15</td>
</tr>
<tr>
<td>carrots (juiced)</td>
<td><strong>Cauliflower</strong> 15</td>
</tr>
<tr>
<td>Rice cakes</td>
<td><strong>Celery</strong> 15</td>
</tr>
<tr>
<td>Honey</td>
<td><strong>Cucumber</strong> 15</td>
</tr>
<tr>
<td>Refined sugar</td>
<td><strong>Eggplant</strong> 15</td>
</tr>
<tr>
<td>Corn (cooked)</td>
<td><strong>Green beans</strong> 15</td>
</tr>
<tr>
<td>Puffed Wheat</td>
<td><strong>Lettuce</strong> 15</td>
</tr>
<tr>
<td>Cornflakes</td>
<td><strong>Low-fat yogurt, artificially sweetened</strong> 15</td>
</tr>
<tr>
<td>White rice</td>
<td><strong>Peppers</strong> 15</td>
</tr>
<tr>
<td>Shredded wheat</td>
<td><strong>Snow peas</strong> 15</td>
</tr>
<tr>
<td>Millet</td>
<td><strong>Spinach</strong> 15</td>
</tr>
<tr>
<td>Raisins (seedless)</td>
<td><strong>Summer squash</strong> 15</td>
</tr>
<tr>
<td>Pasta</td>
<td><strong>Tomatoes</strong> 15</td>
</tr>
<tr>
<td>Bananas</td>
<td><strong>Zucchini</strong> 15</td>
</tr>
<tr>
<td>Couscous</td>
<td><strong>Soybeans, boiled</strong> 16</td>
</tr>
<tr>
<td>Farro</td>
<td><strong>Cherries</strong> 22</td>
</tr>
<tr>
<td>Spaghetti, whole</td>
<td><strong>Blue Berries</strong> 22</td>
</tr>
<tr>
<td>Rye Sourdough</td>
<td><strong>Black Berries</strong> 22</td>
</tr>
<tr>
<td>Wild rice</td>
<td><strong>Raspberries</strong> 22</td>
</tr>
<tr>
<td>Brown rice</td>
<td><strong>Cabbage</strong> 22</td>
</tr>
<tr>
<td>Popcorn</td>
<td><strong>Lemon</strong> 22</td>
</tr>
<tr>
<td>Kiwi, Grapes, Mango</td>
<td><strong>Lime</strong> 22</td>
</tr>
<tr>
<td>Whole-grain pasta</td>
<td><strong>Strawberries</strong> 23</td>
</tr>
<tr>
<td>Plum, Apple, Orange</td>
<td><strong>Tofu</strong> 23</td>
</tr>
<tr>
<td>cannels &amp; Peas</td>
<td><strong>Radishes</strong> 23</td>
</tr>
<tr>
<td>Chick Peas</td>
<td><strong>Onions</strong> 23</td>
</tr>
<tr>
<td>Apricot, dried</td>
<td><strong>Peas, dried</strong> 22</td>
</tr>
<tr>
<td>Milk</td>
<td><strong>Pearl barley</strong> 25</td>
</tr>
<tr>
<td>Nuts 15-20</td>
<td><strong>Grapefruit</strong> 25</td>
</tr>
<tr>
<td>Spinach</td>
<td><strong>Salt</strong> 25</td>
</tr>
</tbody>
</table>
| | | **Cold processed natural vegetable oil are excellent added after cooking to dishes**
| | | **Milk, whole** 27    |
| | | **Spaghetti (Vegetable enriched** 27 |
| | | **Kidney beans, boiled** 29 |
| | | **Lentils green, boiled** 29 |
| | | **Soy Milk** 30       |
| | | **Apricots (dried** 31 |
| | | **Milk, Fat-free** 32 |
| | | **Milk, skinned** 32  |
| | | **Fettuccine** 32     |
| | | **M&Ms (peanut** 32   |
| | | **Chickpeas** 33      |
| | | **Rye Bread** 34      |
| | | **Milk, semi-skinned** 34 |
| | | **Vermicelli** 35     |
| | | **Spaghetti, whole** 37 |
| | | **Apples** 38         |
| | | **Pears** 38          |
| | | **Tomato soup** 38    |
| | | **Green beans** 38    |
| | | **Plums** 39          |
| | | **Ravioli, meat** 39  |
| | | **Brown Rice** 45     |
| | | **Oates Oatmeal** 47  |
| | | **Oatmeal cookie** 47 |
| | | with fructose 47      |
| | | **Raisins** 48        |
| | | **Yams** 48           |
| | | **Fructose cola** 48  |
| | | **Carrots** 46        |
### The Glycemic Index of Selected Foods

<table>
<thead>
<tr>
<th>SUGARS</th>
<th>Low Glycemic Foods</th>
<th>Medium</th>
<th>High Glycemic Foods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Levulose</td>
<td>Fruit sugars</td>
<td>Fructose</td>
<td>Xylitol</td>
</tr>
<tr>
<td>Stevia</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Right handed sugars, mostly processed; make all disease</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GRAINS</th>
<th>Low Glycemic Foods</th>
<th>Medium</th>
<th>High Glycemic Foods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Millet</td>
<td>Pearl Barley</td>
<td>Rye Sourdough</td>
<td>Bulgur Cous-cous</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>GRAIN FOODS</th>
<th>Low Glycemic Foods</th>
<th>Medium</th>
<th>High Glycemic Foods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oatmeal cookie with fructose 5 grain pulse bread</td>
<td>Meat ravioli Whole grain with vegetable pasta</td>
<td>Fettucine Macaroni Spaghetti (vegetable mix with grain)</td>
<td>Bran Muffin Oatmeal cookie (normal)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>FRUITS</th>
<th>Low Glycemic Foods</th>
<th>Medium</th>
<th>High Glycemic Foods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tomatoe</td>
<td>Grapefruit Lemon, Lime</td>
<td>Yogurt with fruits Cherries</td>
<td>Blueberries Blackberries Raspberries Dried apple</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>VEGETABLES</th>
<th>Low Glycemic Foods</th>
<th>Medium</th>
<th>High Glycemic Foods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cold-processed vegetable oils Green vegetables</td>
<td>Lettuce Broccoli Sprouts Cauliflower Cabbage</td>
<td>Tofu Olives Cucumber Carrot Radish</td>
<td>Pumpkin Squash</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>BEANS</th>
<th>Low Glycemic Foods</th>
<th>Medium</th>
<th>High Glycemic Foods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Boiled, unsweetened kidney beans Bean sprouts</td>
<td>Soy beans</td>
<td>Lima beans Black beans Lentils</td>
<td>Butter beans Blackeyed beans</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>NUTS</th>
<th>Low Glycemic Foods</th>
<th>Medium</th>
<th>High Glycemic Foods</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pumpkin seeds</td>
<td>Healthy candybar with fructose and nuts</td>
<td>Peanuts Cashews</td>
<td>Brazil nuts Almonds Cashews</td>
</tr>
</tbody>
</table>

**Index N#**

<table>
<thead>
<tr>
<th></th>
<th>10</th>
<th>20</th>
<th>30</th>
<th>40</th>
<th>55</th>
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<td>30</td>
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<td>Medium</td>
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</tbody>
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**Natural fruit sugars used moderately increase hormones, immunity, and health**

**Blood sugar**

- **Limit disease**
- **Do NOT Eat this**

**Dextrose enters the cell too fast and makes High Glycemic Index**

This makes immune weakness, nervous irritation, and aggravates all diseases. Avoid our exposure to high glycemic foods.
The fluctuation of blood sugar (red) and the sugar-lowering hormone insulin (blue) in humans during the course of a day with three meals. One of the effects of a sugar-rich vs a starch-rich meal.
The blood sugar concentration or blood glucose level is the amount of glucose (sugar) present in the blood of a human or animal. Normally, in mammals the body maintains the blood glucose level at a reference range between about 3.6 and 5.8 mM (mmol/L). It is tightly regulated as a part of metabolic homeostasis.

Glucose is primarily a compact energy store, and is the primary source of energy for body cells, fats and oils (i.e., lipids). It is transported from the intestines or liver to body cells via the bloodstream, and is absorbed by body cells with the intervention of insulin, which is a hormone normally naturally produced by the body.

The mean normal blood glucose level in humans is about 10 mM (10 mmol/L or 140 mg/dL) (since the molecular weight of glucose, C₆H₁₂O₆, is about 180 g/mol). However, the glucose level fluctuates during the day. It rises after meals for an hour or two by a few grams and is usually lowest in the morning, before the first meal of the day (termed "the fasting level"). The total amount of glucose normally in human blood is only about 3.3 to 7g (assuming an ordinary adult blood volume of 5 litres, plausible for an average adult male).

When a blood sugar level is outside the normal range, it may be an indicator of a medical condition. A persistently high level is referred to as hyperglycemia or if low as hypoglycemia. Diabetes mellitus is characterized by persistent hyperglycemia from any of several causes, and is the most prominent disease related to failure of blood sugar regulation. A temporary elevated blood sugar level may also result from severe stress, such as trauma, stroke, heart attack, or surgery; and also from illness. Alcohol, after an initial surge in blood sugar, tends to cause blood sugar to fall. Also, certain drugs can increase or decrease glucose levels.

If blood sugar levels drop too low, a potentially fatal condition called hypoglycemia develops. Symptoms may include lethargy, impaired mental functioning, irritability, shaking, weakness in arm and leg muscles, sweating and loss of consciousness. Brain damage is even possible.

If levels remain too high, appetite is suppressed over the short term. Long-term hyperglycemia causes many of the long-term health problems associated with diabetes, including eye, kidney, heart disease and nerve damage.

Low blood sugar

Some people report drowsiness or impaired cognitive function several hours after meals, which they believe is related to a drop in blood sugar, or "low blood sugar". For more information, see:

- idiopathic postprandial syndrome
- hypoglycemia

Mechanisms which restore satisfactory blood glucose levels after hypoglycemia must be quick and effective, because of the immediately serious consequences of insufficient glucose; in the extreme, coma, but also less immediately dangerous, confusion or unsteadiness, amongst many other symptoms. This is because, at least in the short term, it is far more dangerous to have too little glucose in the blood than too much. In healthy individuals these mechanisms are generally quite effective, and asymptomatic hypoglycemia is generally only found in diabetics using insulin or other pharmacological treatment. Such hypoglycemic episodes vary greatly between persons and from time to time, both in severity and swiftness of onset. For severe cases, prompt medical assistance is essential, as damage (to brain and other tissues) and even death will result from sufficiently low blood glucose levels.

Dextrose Sugar Related Health Problems:

- Acne
- Addiction to drugs, caffeine & food
- Adrenal gland exhaustion
- Alcoholism
- Allergies
- Anxiety
- Appendicitis
- Arthritis
- Asthma
- Behavior problems
- Binge eating
- Bloating
- Bone loss
- Cancer (cancer cells feed on sugar)
- Candidiasis
- Cardiovascular disease
- Cataracts
- Colitis
- Constipation
- Depression
- Dermatitis
- Diabetes
- Difficulty concentrating
- Diverticulitis & diverticulosis
- Eczema
- Edema
- Emotional problems
- Endocrine gland dysfunction
- Fatigue
- Food cravings
- Gallstones
- Gout
- Heart Disease
- High blood cholesterol
- High estrogen levels
- High triglyceride levels
- Hormonal problems
- Hyperactivity
- High blood pressure
- Hypoglycemia
- Impaired digestion of all foods
Sugar may not be the whole answer to why you are ill, but it could be an important part of the puzzle. Check out the following excellent resources and try a sugar reduction program. Then you’ll know how much sugar is influencing your illness by the way you feel.

What to do for your Health
1. Kick the addiction to the high glycemic foods, eat fruits and vegetables and other low glycemic foods.
2. More green tea (use fructose), licorice, and other natural factors for treatment of blood sugar disorders.
3. The fruit juice you buy should never have any processed sugar added, use only fructose.
4. The fruit juice you buy is too often too concentrated. Dilute it buy one third to half for taste.

Sony's sugar battery

BIOplastics

The Japanese have developed a battery run on dextrose, the Brazilians have developed a way to make sugar cane into complex plastics. So the Sugar Industry will not suffer. We need to make energy and plastics from dextrose, and use diluted fructose for food.

Heart-healthy diet: 7 steps to prevent heart
good SUGAR & Oil

Eat at least five servings of fruits and vegetables a day, use vegetables as the center of the meal.

Remember: do not eat foods boiled in oil, get good cold processed vegetable oils and thus good fatty acids, not trans or cooked animal oils. Eat only Levulose (fructose fruit sugars) not Dextrose (cane, corn, potato, grape sugar). Wellness is your Reward. Remember to chew your food, fruits alone, fluids alone, and melons alone.

Make vegetable and fruit juice part of your daily Wellness Healthy Regime.

FOOD is your Best Medicine

Healthy Eating starts on your shopping trip and Health makes the next step at the kitchen. The dinner table is the next step of Healthy Eating.

Food made with anger, fear or hate is Poison. Food made with love is nutrition. If made with extra love, the food is Medicine. Desire's work on Medicine and Wellness has made her the World's most famous medical naturopath alive.
Changing your eating habits can be tough. Start with these seven strategies to kick-start your way toward a heart-healthy diet.

Although you might know eating certain foods can increase your heart disease risk, it's often tough to change your eating habits. Whether you have years of unhealthy eating under your belt or you simply want to fine-tune your diet, here are seven heart-healthy diet tips. Once you know which foods to eat more of and which foods to limit, you’ll be on your way toward a heart-healthy diet.

1. Limit unhealthy fats and cholesterol

Avoid foods with trans-fatty acids, avoid foods boiled in oil, and high glycemic foods cooked in oil. Of the possible changes, limiting how much saturated and trans fat you eat is the most important step you can take to reduce your blood cholesterol and lower your risk of coronary artery disease. A high blood cholesterol level can lead to a buildup of plaques in your arteries, called atherosclerosis, which can increase your risk of heart attack and stroke.

The American Heart Association offers these guidelines for how much fat and cholesterol to include in a heart-healthy diet:

<table>
<thead>
<tr>
<th>Type of fat</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Saturated fat</td>
<td>Less than 7 percent of your total daily calories</td>
</tr>
<tr>
<td>Trans fat</td>
<td>avoid</td>
</tr>
<tr>
<td>Cholesterol</td>
<td>Less than 300 milligrams a day for healthy adults; less than 200 milligrams a day for adults with high levels of low-density lipoprotein (LDL), or “bad,” cholesterol or those who are taking cholesterol-lowering medication</td>
</tr>
</tbody>
</table>

The best way to reduce saturated and trans fats in your diet is to limit the amount of solid fats - butter, margarine and shortening - you add to food when cooking and serving. Use low-fat substitutions when possible for a heart-healthy diet. For example, top your baked potato with salsa or low-fat yogurt rather than butter, or use low-sugar fruit spread on your toast instead of margarine. You may also want to check the food labels of some cookies, crackers and chips. Many of these snacks - even those labeled “reduced fat” - may be made with oils containing trans fats. One clue that a food has some trans fat in it is the phrase “partially hydrogenated” in the ingredient list.

When you do use fats, choose monounsaturated fats, such as virgin cold processed olive oil, sunflower, safflower, soybean or canola oil. Polyunsaturated fats, found in nuts and seeds, are also good choices for a heart-healthy diet. When used in place of saturated fat, monounsaturated and polyunsaturated fats may help lower your total blood cholesterol. But moderation is essential. All
types of fat are high in calories.

If you’re not sure which fats or oils to use when cooking or baking, use this guide:

<table>
<thead>
<tr>
<th>Choose (always use only as little as you can)</th>
<th>Avoid</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Olive oil</td>
<td>• Butter</td>
</tr>
<tr>
<td>• Canola oil</td>
<td>• Lard</td>
</tr>
<tr>
<td>• Margarine labeled “trans-fat-free”</td>
<td>• Bacon</td>
</tr>
<tr>
<td>• Cholesterol-lowering margarine, such as Benecol, Promise activ or Smart Balance</td>
<td>• Gravy</td>
</tr>
<tr>
<td>• Cream sauce</td>
<td>• Cream sauce</td>
</tr>
<tr>
<td>• Nondairy creamers</td>
<td>• Nondairy creamers</td>
</tr>
<tr>
<td>• Hydrogenated margarine and shortening</td>
<td>• Hydrogenated margarine and shortening</td>
</tr>
<tr>
<td>• Cocoa butter, found in chocolate</td>
<td>• Cocoa butter, found in chocolate</td>
</tr>
<tr>
<td>• Coconut, palm, cottonseed and palm-kernel oils</td>
<td>• Coconut, palm, cottonseed and palm-kernel oils</td>
</tr>
</tbody>
</table>

2. Choose low-fat protein sources

Lean meat, poultry and fish, low-fat dairy products and egg whites or egg substitutes are some of your best sources of protein. But be careful to choose lower fat options, such as skim milk rather than whole milk and skinless chicken breasts rather than fried chicken patties. Fish is another good alternative to high-fat meats. Some types of fish - such as cod, tuna and halibut generally have less total fat, saturated fat and cholesterol than do meat and poultry. And certain types of fish are heart healthy because they’re rich in omega-3 fatty acids, which can lower blood fats called triglycerides and may reduce your risk of sudden cardiac death. You’ll find the highest amounts of omega-3 fatty acids in cold-water fish, such as salmon, mackerel and herring. Other sources are flaxseed, walnuts, soybeans and canola oil. Legumes - beans, peas and lentils - also are good sources of protein and contain less fat and no cholesterol, making them good substitutes for meat. Substituting soy protein for animal protein - for example, a soy burger for a hamburger - will reduce your fat and cholesterol intake.

To help you decide which high-protein foods are best, use this guide:

<table>
<thead>
<tr>
<th>Choose</th>
<th>Avoid</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Skim or low-fat (1 percent) milk</td>
<td>• Full-fat milk and other dairy products</td>
</tr>
<tr>
<td>• Fat-free or low-fat dairy products, such as yogurt and cheese</td>
<td>• Organ meats, such as liver</td>
</tr>
<tr>
<td>• Eggs</td>
<td>• No SYNthetic egg substitutes</td>
</tr>
<tr>
<td>• Skinless poultry</td>
<td>• Fatty and marbled meats</td>
</tr>
<tr>
<td>• Legumes</td>
<td>• Spareribs</td>
</tr>
<tr>
<td>• Soybeans and soy products, for example, soy burgers</td>
<td>• Cold cuts</td>
</tr>
<tr>
<td>• Lean ground meats</td>
<td>• Frankfurters, hot dogs and sausages</td>
</tr>
<tr>
<td></td>
<td>• Bacon</td>
</tr>
<tr>
<td></td>
<td>• Fried, breaded or canned meats</td>
</tr>
<tr>
<td></td>
<td>• All nitrate nitrite processed meats like hot dogs, bologna, salami</td>
</tr>
</tbody>
</table>

3. Eat more vegetables and fruits

Vegetables and fruits are good sources of vitamins and minerals; they are low in calories and rich in dietary fiber. A diet high in soluble fiber, the kind found in fruits and vegetables, can help lower your cholesterol and reduce your risk of heart disease. Vegetables and fruits also contain substances found in plants that may help prevent cardiovascular disease. Eating more fruits and vegetables may help you eat less high-fat foods, such as meat, cheese and snack foods.

Featuring vegetables and fruits in your diet may not be as difficult as you might think. Keep carrots, cauliflower and broccoli washed and cut in your refrigerator for quick snacks. Keep apples, bananas, grapes or peaches in a bowl in your kitchen so that you’ll remember to eat them. Choose recipes that have vegetables or fruits as the main ingredient, such as vegetable stir-fry or fresh fruit mixed into salads. Even frozen or canned fruits and vegetables are good choices, provided they don’t have lots of added sodium or sugar. Don’t smother vegetables in butter, dressings, creamy sauces or other high-fat garnishes.

This guide can help you sort out which fruits and vegetables offer the most health benefits:

<table>
<thead>
<tr>
<th>Choose</th>
<th>Avoid</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Fresh or frozen vegetables and fruits</td>
<td>• Coconut</td>
</tr>
<tr>
<td>• Low-sodium canned vegetables</td>
<td>• Vegetables with creamy sauces</td>
</tr>
<tr>
<td>• Canned fruit packed in juice or water</td>
<td>• Fried or breaded vegetables</td>
</tr>
<tr>
<td></td>
<td>• Canned fruit packed in heavy syrup</td>
</tr>
</tbody>
</table>

32 33
Best & Worst Foods for Your Cholesterol - Trans fat is the worst offender.

Here’s how to avoid it.

While nutritionists and researchers may disagree about how certain foods and fats affect our overall health, one universal truth that everyone can agree on is that trans fat is an ultimate evil lurking in our food chain, proven time and again to lower healthy HDL cholesterol, raise artery-clogging LDL cholesterol, and put us at increased risk for cardiovascular disease. In fact, this artificial fat is so hazardous to our bodies that in 2007 the New York City Department of Health banned its use in restaurants.

Which of course led to the destruction of all the city’s restaurants and caused New York to drop into the sea. Oh no, wait ... that didn’t happen. In fact, the effect on New York’s restaurants - including its fast-food joints - was pretty much zilch. That’s because there are plenty of suitable, and much healthier, options out there and plenty of industry titans are using them. But to this day, many chain restaurants and food manufacturers in most parts of the country are still clinging to hydrogenated oils and shortening, and putting you, the consumer, in danger as a result. As one customer said it best, “there was a small taste difference, but within two weeks we acclimated and now it is better in flavor”.

What’s so unfair about this ongoing disregard for our health is that many fats are actually good for us-having a positive impact on our cholesterol profiles while also helping us stay fuller longer. Monounsaturated fats, like those found in olive and canola oils and healthy foods like avocados and nuts, can be used to make most any food better for us. Good fats are essential for health. But high temp cooking (past 120 degrees Fahrenheit, 45 Celsius) destroys most of the nutritional value of a fat.

Make it your mission to eat healthfully for every single meal. Check out the four worst-and four best-meals for your cholesterol. And for more great tips like these, order the latest, most up-to-date version of the best-selling weight-loss series: Eat This, Not That! The Best (& Worst!) Foods in America!

The worsts

Worst breakfast

Bob Evans Stacked & Stuffed Caramel Banana Pecan Hotcakes

- 9 g trans fat
- 1,543 calories
- 77 g fat (26 g saturated)
- 109 g sugars
- 2,259 mg sodium

These problematic pancakes keep popping up on our worst lists for a reason: They have more calories, sugar, carbs, sodium and fat than nearly any other breakfast in America. Add to that list 4½ days’ worth of trans fat and you begin to wonder why Bob Evans doesn’t make you sign a waiver before applying the syrup. When ordering from Bob's breakfast menu, stick with items labeled “Fit from the Farm”-aside from scrambled eggs or a plain bowl of oatmeal, they’re the only healthy breakfast foods Bob Evans offers.

Worst lunch

Boston Market Classic Chicken Salad Sandwich

- 5 g trans fat
- 800 calories
- 41 g fat (7 g saturated)
- 1,900 mg sodium

Chicken and tuna salad sandwiches might not be the models of health some purport them to be, but even we were surprised to see how bad this Boston Market sandwich really is. Where do they possibly find the room to cram 2½ days’ worth of trans fat into chicken, mayonnaise, lettuce and bread? The answer lies somewhere in the murky ingredient list, which, as with too many of their dishes, runs at more than 40 items long. Boston Market has a swath of solid entrées - from rotisserie chicken to slices of sirloin - and healthy sides on their menu. Get a sandwich stacked with lean white meat, minus the trans fat, with Boston Market’s line of open-faced sandwiches.

Worst snack

Pop-Secret Kettle Corn (4 cups popped)

- 6 g trans fat
- 180 calories
- 13 g fat (3 g saturated)
- 150 mg sodium

The only secret here is that the popcorn purveyor uses partially hydrogenated oil to pop their kernels, turning a reasonable snack into a nutritional nightmare of heart-wrenching proportions. This box has three bags of popcorn, which means every time you buy it, you’re bringing 54 grams of dangerous trans fat into your house. There’s not an easier-or more important-swap to make.

Worst dinner

Denny’s Double Cheeseburger

- 7 g trans fat
- 1,540 calories
- 116 g fat (52 g saturated)
- 3,880 mg sodium

There’s nothing redeeming about this atrocious cheeseburger-stacked between two buns is nearly three times your daily limit of trans fat, three-quarters of the calories you should consume in one day, and the sodium equivalent of 118 saltine crackers. Oh, and did we mention the 59 bacon strips’ worth of saturated fat? Aside from the Fit Fare Boca, you’re not going to find a reasonable burger on the Denny’s menu, so it’s either this or a grilled chicken sandwich.
The bests

Best breakfast

Starbucks Perfect Oatmeal with Nut Medley
- 240 calories
- 11 g fat (1.5 g saturated)
- 0 mg sodium

Best lunch

Baja Fresh Grilled Mahi Mahi Tacos (2)
- 460 calories
- 18 g fat (3 g saturated)
- 600 mg sodium

Best snack

Wholly Guacamole Classic (2 Tbsp)
- 50 calories
- 4 g fat (0.5 g saturated)
- 75 mg sodium

Best dinner

Uno Chicago Grill Lemon Basil Salmon with Steamed Broccoli
- 510 calories
- 39 g fat (5 g saturated)
- 1,030 mg sodium

My buddy, Gill, came to me a while back looking for advice on how to banish the bulging belly he had acquired in his later years. I skipped the diet lecture and instead gave him a copy of the book, Eat This, Not That!, and a single piece of advice: Start with the drinks chapter.

Four months later, Bill has adopted the simple food swap philosophy and dramatically altered his calorie intake without giving up the foods and drinks he loves. His reward: 25 pounds and three inches off of his waistline-in around six weeks!

I told Gill to start with beverages because between soda, coffee drinks, smoothies, and booze, he was sipping away more than a quarter of his daily calories. He’s not the only one. A study from the University of North Carolina found that we consume 450 calories a day from beverages, nearly twice as many as 30 years ago! This increase amounts to an extra 23 pounds a year that we’re forced to work off or carry around with us.

There’s good news and bad news when it comes to liquid calories. The bad news is they are the most difficult calories for us to gauge, because we have none of the greasy, cheesy visual...
cues we get when we go face-to-face with a plate of loaded nachos or a triple cheeseburger. The good news is that they are the easiest calories to cut from your diet. Just ask Gill.

I’ve identified the most bloating beverages in gas stations, bars, smoothie counters, and coffee shops across America and replaced them with sensible and satisfying stand-ins for a fraction of the caloric cost. So you can sip what you want, skip the diet, and still lose lots of weight this year.

**You Must Skip Cola (Even Diet)**

Scientists in Boston found that drinking one or more regular or diet colas every day doubles your risk of metabolic syndrome—a cluster of conditions, including high blood pressure, elevated insulin levels, and excess fat around the waist, that increase your chance of heart disease and diabetes. Controlling blood pressure and cholesterol levels, preventing diabetes, and not smoking can add 6 to 9 1/2 healthy years to your life.

One culprit could be the additive that gives cola its caramel color, which upped the risk of metabolic syndrome in animal studies. Scientists also speculate that soda drinkers regularly expose their tastebuds to natural or artificial sweeteners, conditioning themselves to prefer and crave sweeter foods, which may lead to weight gain, says Vasan S. Ramachandran, MD, a professor of medicine at Boston University School of Medicine and the study’s lead researcher.

Better choices: Switch to tea if you need a caffeine hit. Green tea is better. If it’s fizz you’re after, try sparkling water with a splash of juice.

**First signs of Fatty Acid Deficiency**

1. Sensation of chill or cold
2. Lightheaded
3. Brain Fatigue
4. Hungry

*For the body to make Fatty Acids it takes much energy. Energy that we might not have in an over stressful world. As we age and we as we stress we should supplement FA in our diet to give us extra energy.*
Prof. Nelson’s Salad Oil

To get all of your fatty acids you must use cold processed oils of many types. Blend sesame, safflower, sybean, sunflower, olive, and avocado oil in equal parts, to get some of the high end fatty acids soak finely crushed nutmeg, clove, mustard seed, and parley in canola oil or sesame oil. Let it sit in the sun for 2 days. Blend this into the oil and this will make a fine source of all your fatty acids. If you can get nutmeg, parsley, mustard, or clove oil all the better then you won’t have to make it.

Prof. Nelson’s better butter

For those of you who are not ready to give up the taste of butter, this is an excellent way to reduce your saturated fats. It combines the saturated fats in butter with the polyunsaturated fats in sunflower oil. By using cold pressed oil, you are giving yourself the essential fatty acids your body needs so much. If you eat the same amount of Better Butter as plain butter, you are cutting your saturated fat intake by half.

- 1/4 pound all natural butter at room temperature
- 1/3 cup cold-pressed oil combo from above

Blend with a fork and refrigerate. Makes 1/4 pound. It will soften quick in the heat.
Never Have a Heart Attack

3 new surprising ways to help predict and prevent a heart attack.

Your doctor can order a host of complex tests to gauge the health of your heart, but I’d like to tell you about three new methods of predicting heart disease that are surprisingly simple and effective. One can be done with your eyes closed—literally. Another can be ordered the next time you have a blood test, and the third involves taking the temperature of your finger. Here’s a rundown of how each one works:

1. The sleep test

Answer this question: Do you feel drowsy during the day? If so, you may be harming your heart. Every extra hour of sleep middle-age adults can add to their nightly average reduces their risk of coronary artery calcification by 33 percent, according to a study reported in the Journal of the American Medical Association. When you’re even a little sleep deprived, your body releases stress hormones that constrict arteries and cause inflammation. If you routinely wake up feeling tired or need an afternoon nap, then you’re probably sleep deprived. Try either changing your sleep habits (darker room, TV off, earplugs) or going to bed 30 minutes earlier until symptoms disappear. If your spouse complains about your snoring or if you often wake up with a headache, get checked for sleep apnea disorder.

2. The vitamin D test

Low levels of vitamin D, found in nearly 80 percent of U.S. adults, can cause a rise in blood pressure and increased arterial inflammation. Fortunately, it’s easy to test for and remedy any deficiency. Ask your doctor to order a vitamin-D analysis as part of your next blood test. Optimal levels are 30 to 40 ng/mL, but some doctors contend 50-plus ng/mL is even better. If yours is low, get 10 to 15 more minutes of sunlight per day (without sunblock), eat more vitamin D-rich foods (salmon, tuna, fortified orange juice), or take a D supplement (as recommended by your doctor). It’s one of the simplest things you can do to protect your heart.

Follow Dr. Agatston’s 3-Point Plan to protect your heart’s health.

3. The finger test

Lining all your blood vessels—even those in your index finger—is a single layer of cells, called the endothelium, that produce chemicals that affect the vessels’ function, causing dilation, constriction, clotting, etc. Negative changes in the endothelium occur years before any other measurable signs of heart trouble appear, so researchers have believed that if the health of the endothelium could be tested, we just might lick heart disease and stroke.

Now we have that test. The one I use, called Vendys, involves attaching a fingertip-temperature detector to your index finger and wrapping a blood-pressure cuff around your arm. As the cuff is inflated, blood flow to the hand decreases and finger temperature drops. After five minutes, the cuff is deflated and blood flow returns. The faster and more completely finger temperature rebounds, the healthier the endothelium.

The great thing about this test is that I can not only assess your vascular health but also partially...
monitor how well treatment is working. If a patient loses weight, lowers her blood pressure or begins taking medication, I can detect positive changes in her endothelial function almost instantaneously. With other methods—calcium scoring, for instance—I’d be waiting years. Eventually, this finger test could be an invaluable aid for monitoring heart health.

If you’re at risk of heart disease, discuss this and the other tests with your doctor. There’s a good chance that if you pay attention to what they tell you, they’ll help you keep your heart beating stronger, longer.

Symptoms Too Dangerous To Ignore

Important warning signs you should always discuss with your doctor.
Rebecca Ruiz, Forbes

Common sense tells us that symptoms like acute chest pain and abdominal pain or persistent fevers and headaches are important reasons to seek medical attention. Yet some patients, because they lack access to a physician or are simply too distracted or stubborn to make the phone call, disregard such symptoms until it’s too late.

Dr. Joseph W. Stubbs, president of the American College of Physicians and an internist in Albany, Ga., has treated both types.

In Depth: 10 Symptoms Too Dangerous To Ignore

Recently, he saw a diabetic patient who quit taking blood thinner and blood pressure medications after losing her job. By the time she contacted his office for help, four of her toes had turned gangrenous—a common risk for diabetics who experience poor circulation.

Today this kind of behavior is common; the recession has forced many to postpone routine health care. A Kaiser Family Foundation telephone poll of 1,200 people conducted in April found that 60 percent of respondents were delaying care in some way, including skipping a recommended medical test, using home or over-the-counter remedies instead of seeing a physician, or failing to fill a prescription.

The ability to pay for health care, however, does not always mean a patient will seek needed treatment. Stubbs has also cared for work-obsessed patients who neglect their health because of perceived time constraints. Either way, Stubbs says, “I would urge people to not be pound foolish and penny wise.”

Red flags

Though it can be difficult to separate critical from typical aches and pains, Dr. Stubbs says that emergent symptoms should be considered on a continuum from acute to moderate to mild. Chest pains, fevers above 101 degrees and severe abdominal pain, for example, should be examined immediately.

A patient may diagnose new chest pain as indigestion, but it can instead indicate a heart attack. A high fever combined with shortness of breath, mental changes or lower back pain could be signs of pneumonia, meningitis or a kidney infection, respectively.

Unusual skin rashes should be examined quickly, since they can indicate an underlying infection, lupus, shingles or the measles. Changes in skin pigmentation or new growths, however, don’t need to be seen in the emergency room; scheduling a visit with a physician soon after noticing the issue is sufficient.

Other symptoms that require urgent medical attention include sudden trouble with mental faculties—a sign of stroke—and fainting, a rare but deadly sign of an irregular heart rhythm.

Planning for health

Dr. Ron O’Quin, a physician in Bellevue, Wash., agrees that such symptoms should be considered urgent or high-priority and encourages his patients to contact him at any time with any concern.

His patients do pay for that privilege, however, since he practices with MD2 (pronounced MD squared), a network of providers who offer a so-called concierge style of medicine in which individuals pay an annual fee of $15,000 for unlimited access to a physician. MD2 physicians treat only 50 families, which allows them to develop close relationships with patients.

O’Quin recognizes the unique advantage of his practice, but says patients with varying levels of insurance coverage and access can try to achieve a similar level of attention by developing short- and long-term plans for their health. That should include scheduling the annual battery of tests, monitoring any chronic health conditions and asking for reminders about starting and adhering to new medication regimens.

Those plans may not prevent an emergency, but they can help a patient take control of his or her health and feel more comfortable about communicating with a health care professional about an emergent problem.

With some things, “you only get one chance,” O’Quin says. “Ignoring that is a serious mistake.”

5 symptoms you should not ignore:

• Chest Pain
• Blacking out
• Fever
• Bleeding
• difficulty swallowing or breathing
The SCIO Universal Electrophysiological Biofeedback System can safely measure over the skin (transcutaneous) skin electro-potential down to the micro-volt range. Virtual and mathematical calculations of the attained data can provide CNS (Central Nervous System) biofeedback data, so as to include simple EEG (electroencephalography), 3-lead ECG (simple stress electrocardiography), global transcutaneous EMG (electromyography).

The system can measure the transcutaneous skin resistance by application of a medical safe micro-current volumetric pulse, so as to measure GSR (galvanic skin response) and TVEP (transcutaneous volumetric evoked potential).

The system is designed for the detection of stress and reduction of stress through CNS biofeedback data or stress lifestyle questionnaires. The stress and lifestyle questionnaires provide educational feedback through library referenced functions. And the device can be used for the treatment of muscular re-education from injury, muscle weakness, sport muscular enhancement or various dystonias. The applied volumetric pulse can be used to detect and affect in established modalities such as pain (TENS [transcutaneous electro nerve stimulation]), trauma/wound healing, change stability imbalance, redox potential and electrophysiological reactivity.

The device after 20 years of use is quality tested, clinically evaluated and scientifically validated as safe and effective.

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Atherosclerosis

This is full of Large Undigested Fats and Proteins and bad low energy Calcium, Bad Fatty Acids and unprocessed stress cells and traumas unhealed Produce an accumulation of blockage in the artery, producing circulation disease.

"Who does a Caneor have to kill to get more sugar around here?"

47
Fructose...

...or levulose, is the form of sugar found in fruit and honey. It is a laevorotatory monosaccharide with the same empirical formula as glucose but with a different structure. Although fructose is a hexose (6 carbon atoms), it generally exists as a 5-membered hemiketal ring (a furanose).

All fruit naturally contains a certain amount of fructose (often together with glucose), and it can be extracted and concentrated to make an alternative sugar.

Fructose is often used in food products designed for people with diabetes mellitus or who have problems with hypoglycaemia, because it is metabolised more slowly (GI 32) than cane sugar (sucrose) and is sweeter, so it has a smaller effect on blood-sugar levels. However, rarely some people can react badly to fructose so it is not an option for those who need to restrict sucrose intake.

1. Structure

The first -OH points the opposite way from the second and third -OH. Be aware, there are mistakes in the formulas of the ring structures! All -CH₃’s must be -CH₂’s (and instead of H₃C- it must read H₂C- of course)

1.1 Isomerism

D-Fructose has the same configuration at its penultimate carbon as D-glyceraldehyde. Fructose is more sweet than glucose due to its stereomerism structure.

Fructose intolerance is a hereditary condition due to a deficiency of liver enzymes that metabolise fructose. Not to be confused with fructose malabsorption, a deficiency of fructose transporter enzyme in the enterocytes, which leads to bloating and diarrhea.

Fructose malabsorption is a condition in which the fructose carrier in enterocytes is deficient. Symptoms and medical tests are similar as in lactose intolerance. This condition is common in patients with symptoms of irritable bowel syndrome. An appropriate diet can help. A small proportion of patients with both fructose malabsorption and lactose intolerance suffers from coeliac disease.

This is not to be confused with fructose intolerane, an inherited condition in which the liver enzymes that break fructose up are deficient.
**EVOKED POTENTIAL**

and the European TVEP QQC
(both patented and trademarked)

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**Shark Senses**

Mary Ann Badawi & Stephanie Parker

- A shark's ampullae of Lorenzini are able to feel electric currents at short ranges.
- All living things emit a small electrical current, a shark can feel it from 0-8 Hz.
- The bonnethead shark has an electrosense that is five million times greater than the electrosense of humans.
- It's also thought that the hammerhead shark evolved to increase its surface area for electrical reception.

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In 5th grade we were taught we are made up of atoms made of electrons and protons and neutrons. The electrons in the outer level are so charged they never touch. We are made of electrical fields.

The QQC is a very advanced patented trademarked technology with a CE mark. It measures in a very sophisticated process the Voltammetric electrical field of any item. If you look up voltammetry in Google you see thousands of references for a world recognized very scientific chemical process also referred to as Polography. You can see our patented process at http://www.voltametriqqc.ro/
and as metabolic intermediate. Secondly it serves in the structure of DNA and RNA. And lastly many sugars are coupled to proteins and fats, and fulfill a roll in recognition processes.

The carbohydrates form a large group of molecules. Carbohydrates are also known as saccharin’s or sugars. The name carbohydrate originates from the observation that these substances lose water (hudson = water) when heat is applied and after that carbon is left. The general formula for carbohydrates is: \( C_n(H_2O)_n \).

Carbohydrates are made in large quantities inside plants during the photosynthesis (assimilation). Hereby carbohydrates are formed from water and carbon dioxide:

\[
\begin{align*}
n \text{H}_2\text{O} + n \text{CO}_2 & \rightarrow C_n(\text{H}_2\text{O})_n + n \text{O}_2 \\
\end{align*}
\]

In this reaction, sun-energy is taken up and is preserved in chemical substances. Carbohydrates are energy storage molecules. This energy can be released by the opposite process: burning (dissimilation). All animal life uses the burning of carbohydrates to obtain energy:

\[
\begin{align*}
(\text{CH}_2\text{O})_n + n \text{O}_2 & \rightarrow n \text{H}_2\text{O} + n \text{CO}_2 + \text{energy} \\
\end{align*}
\]

Carbohydrates are classified based on molecular size in three groups. The three groups are:

- Monosaccharides (simple sugars)
  (among others Glucose, Fructose, Ribose and Galactose)
- Disaccharides (molecules composed of two monosaccharides)
  (among others Saccharose, Maltose and Lactose)
- Polysaccharides (macromolecules consisting of long chains composed of saccharides)
  (among others Cellulose, Starch and Glycogen)

### Monosaccharides

Monosaccharides are the simplest carbohydrates. They can be divided in aldoses and ketoses. The formula for monosaccharides is \((\text{CH}_2\text{O})_n\). The smallest monosaccharides are, with three carbon atoms \((n = 3)\), glyceraldehyde and dihydroxyacetone. Glyceraldehyde is called an aldose because it contains one aldehyde group. Dihydroxyacetone is called a ketose because it has one keto group.

Glyceraldehyde has an asymmetrical carbon atom, because of that, two different forms of the molecule are possible. These two forms are indicated by D- and L-Glyceraldehyde. The letter D and L refer to the asymmetrical carbon atom which is located the farthest away from the aldehyde or keto group (here one after the lowest atom). There are for aldose with three carbon atoms (trioses) two different forms possible. For aldose with four carbon atoms (tetroses), there are four different forms possible, because there are two asymmetrical carbon atoms. For aldose with five C-atoms (pentoses) there are eight different and with six C-atoms (hexoses) there are sixteen different forms possible.

Below the different aldoses until six carbon atoms are represented. The aldehyde group is represented in green. These sugars have the D configuration and are indicated in red. For each of the aldose there is also an L-form.

In the group of the ketoses also much different forms are distinguishable. Ketoses also have D and L form, except dihydroxyacetone because it has no asymmetrical carbon atom. There are less different ketoses than aldoses because they have an asymmetrical carbon atom less.

Below the different ketoses until six carbon atoms are represented. They are called ketoses because they contain a keto group (represented in green). The group causing the D-configuration of the ketose is represented in red. For each D-ketose there is also an L form.

The most important and most known monosaccharide are: glucose, fructose, galactose and ribose.

Glucose and fructose in a solution are not prevent in the closed extended form proposed until now, but a ring like form.
In glucose, the aldehyde group at the C-1 atom reacts with the hydroxyl group at C-5 to form a ring. This ring form is also called a pyranose because it resembles pyran.

By forming this ring an asymmetrical carbon atom on carbon atom 1 is formed. Because of this, two different forms of the sugar are possible. These two forms are called alpha or beta-D-Glucopyranose.

Ketose also form a ring structure. The keto group at C-2 reacts with the hydroxyl group at C-5 and form a ring structure. This five carbon atom ring is called a furanose because it resembles furan.

**Glucose**

Glucose is also called dextrose. Glucose is a sugar that consists of six carbon atoms. These carbon atoms lie in a ring. This gives an asymmetrical molecule of five carbon atoms in a ring and 1 carbon atom outside of the ring.

Glucose is generally present in living organisms. The human blood contains approximately 0.8 g/l (5 mmol/l) of glucose. In case of an illness, the glucose level may have changed. Glucose is also a many measured mark in hospital laboratories.

Glucose is taken up in the small intestine and is transported to the liver via the hepatic portal vein. The liver regulates the glucose concentrations in the blood. If there is too much glucose in the blood, glycogen is formed. And when there is too little glucose in the blood, this glycogen is broken down again into glucose. This is all regulated in the glycogen metabolism.

Glucose is used as a fuel, glucose is energy. The use of glucose as energy happens in the metabolic processes: Glycolysis and Citric acid cycle.

**Fructose**

Fructose, is found in high concentrations in fruits and is a constituent of honey. Fructose tastes less sweet than glucose. Fructose is a sugar that exists of six carbon atoms. These carbon atoms lie in one ring. This gives a symmetric molecule of four carbon atoms in one ring and two carbon atoms at both sides of the ring.

Fructose is not taken up as well as glucose by the small intestine.
Galactose

Galactose is also a sugar with six carbon atoms with a somewhat different structure as glucose. It most often accompanies Vitamin C. Glucose is taken up better by the small intestine than fructose. Galactose arises in the small intestine from lactose (milk sugar) from milk. Lactose is a disaccharide that consists of glucose and galactose. This lactose is broken down by lactase, produced by the intestine glands.

Ribose

Ribose is a sugar that exists of five carbon atoms. It resembles fructose, only in ribose a side chain has been taken off. Ribose is one of the most important building blocks of large molecules. Ribose is part of the molecules: AMP, ADP, ATP, cyclical AMP and RNA. Also in DNA ribose is built in, but in the case DNA a variant called desoxiribose. Ribose can be produced by the body in the metabolic process the pentose cycle, in the form of ribose-5-phosphate.

Disaccharides

When two cyclic monosaccharides (acetal bonding) are coupled by means of a glucoside bonding a disaccharides arises. A glycoside bonding arises together with a split off of water. Disaccharides are commonly present in nature and form important components of foods. Disaccharides are also important in the formation of polysaccharides and monosaccharides. The most important disaccharides are: Saccharose, Maltose and Lactose.

Saccharose

Saccharose is also known as: sugar, table sugar, sucrose. The organic chemical name is Alpha-D-Glucopyranosyl-(1->2)-Beta-D-fructofuranoside. This disaccharide is composed of the monosaccharides glucose and fructose. During the digestion, saccharose is broken down by the enzyme invertase in glucose and fructose. Invertase is also called sucrase. This enzyme is produced in the small intestine where the breakdown of sucrose occurs.

Maltose

Maltose is also called malt sugar. This disaccharide is composed of two of the monosaccharides glucose. These glucose units are connected with an alpha 1,4 bond. Maltose can be broken down in our digestive system. The enzyme maltase can break down maltose in individual glucose units. The enzyme maltase is produced in the small intestine. Maltase hydrolysis the alpha-(1-4)-bond in maltose in which glucose is released. Glucose is absorbed in the small intestine.

Lactose

Lactose is also known as milk sugar and is present in milk. The organic chemical name is Beta-D-Galactopyranosyl-(1->4)-Alpha-D-Glucopyranose. Lactose is composed of the monosaccharides galactose and glucose. The two molecules are connected by a Beta-1,4-bond. The word Beta, in the name of the bond between the two monosaccharides units, indicates that the two units are not in a straight area, they are slant on each other. The numbers 1,4 mean that the bonds is present between the carbon atom 1 of galactose and carbon atom 4 of glucose. Fungus like Candida is not killed by lactose, but lactose will stop their ability to reproduce.

Lactose intolerance

Lactose is broken down in the digestion to galactose and glucose by the enzyme lactase. Most children can break down lactose in their digestion. In contrast to children, there is a large group of adults in the world that can not produce the enzyme lactase. These people are intolerant to milk. After drinking milk, lactose accumulates in the lumen of the intestine because there is no mechanism to take up this disaccharide. The symptoms of lactose intolerance are nausea, cramp, pain and diarrhoea.

Lactose intolerance is a genetic variation that mostly presents itself in adolescent or in adult life. Lactose intolerance is prevalent in 3% of Danish people, and in 97 % of Thai people. There is lactase treated milk available for lactose intolerant people. The ability of people to break down lactose in maturity appears to have been developed since people started to domesticate cow cattle. This was some thousand years ago.
We need to Eat Amino Acids, Fatty Acids, and Carbohydrates our bodies need to break up protein to get amino acids. We need water, air, minerals, vitamins, enzymes as well. We have perhaps put too much emphasis on just sugars. In fact we need carbohydrates to make sugars from. We should get complex carbohydrates not simple processed ones. Then if we have the right amounts of B vitamins and minerals we can make our own correct blood sugar. Good fruits, sprouted grains, legumes and other vegetables are the best source of good natural Carbohydrates.

Sprouts supply us with all of the Amino-Acids we need. it is a burden on our digestive system to break down amino acids from proteins. This is hard if we are under stress. As we get more Fatty and Amino Acid deficient we learn to crave cooked meat, but we get bad FA and AA and we assimilate Large undigested Fats and Proteins and thus crave more. It is a helpless downward spiral without the education to see that fruits and vegetables are the answer.
Polysaccharides

Polymers are biomolecules composed of units in which we can recognize the monosaccharides. Some polysaccharides can be hydrolysed by enzymes in our digestion. In this process polysaccharides are split up in monosaccharides.

The most important polysaccharides are: Cellulose, Starch and Glycogen.

Cellulose

Cellulose is an important “building material” in plants. Cellulose is harvested from vegetable material such as straw and cotton plants.

Natural textile fibre such as linen (flax), cotton and viscose (artificial silk) consist of cellulose. Just as paper, cardboard, cotton wadding and cellophane.

Cellulose can not be broken down in our digestive system. Humans do not have an enzyme that is able to break down the beta bonds in cellulose. Cellulose and other indigestible compounds form the dietary fiber, which are important in our digestive system.

Starch

Starch is an energy storage molecule for plants. There are two forms of starch. The not subdivided form is called Amylose. In Amylose the glucose units are coupled by Alpha-1,4-bonding. The second form is Amylopectine. In this form, there are branchings in the form of alpha-1,6-bonds that occur once every thirty units. This form resembles glycogen, but with less alpha-1,6 branchings.

Starch can be broken down in our digestive system. Starch is broken down in individual glucose units by the action of the enzyme amylase. Amylase is present in our saliva and is produced by the pancreas. Amylase hydrolysis the alpha-(1,4)-bonds. Glucose is absorbed in the small intestine.

Glycogen

Glycogen serves as an energy storage in humans. It consists of glucose units that are coupled by Alpha-1,4-bonds, with branchings as alpha-1,6-bonds. The 1,6 bonds occur every ten units.

We call this handedness CHIRALITY, from the Greek CHIRO meaning hand.

Chirality (chemistry)

Two enantiomers of a generic amino acid

(S)-Alanine (left) and (R)-alanine (right) in zwitterionic form at neutral pH
A chiral molecule is a type of molecule that lacks an internal plane of symmetry and has a non-superimposable mirror image. The feature that is most often the cause of chirality in molecules is the presence of an asymmetric carbon atom.

The term chiral (/ˈkaɪrəl/) in general is used to describe an object that is non-superposable on its mirror image. Achiral (not chiral) objects are objects that are identical to their mirror image. Human hands are perhaps the most universally recognized example of chirality: the left hand is a non-superposable mirror image of the right hand; no matter how the two hands are oriented, it is impossible for all the major features of both hands to coincide. This difference in symmetry becomes obvious if someone attempts to shake the right hand of a person using his left hand, or if a left-handed glove is placed on a right hand. The term chirality is derived from the Greek word for hand, χεῖρ (χειρ). It is a mathematical approach to the concept of “handedness”.

In chemistry, chirality usually refers to molecules. Two mirror images of a chiral molecule are called enantiomers or optical isomers. Pairs of enantiomers are often designated as “right-” and “left-handed.”

Molecular chirality is of interest because of its application to stereochemistry in inorganic chemistry, organic chemistry, physical chemistry, biochemistry, and supramolecular chemistry.

History

The term optical activity is derived from the interaction of chiral materials with polarized light. A solution of the (+)-form of an optical isomer rotates the plane of polarization of a beam of plane polarized light in a counterclockwise direction, vice-versa for the (+) optical isomer. The property was first observed by Jean-Baptiste Biot in 1815, and gained considerable importance in the sugar industry, analytical chemistry, and pharmaceuticals. Louis Pasteur deduced in 1848 that this phenomenon has a molecular basis. Artificial composite materials displaying the analog of optical activity but in the microwave region were introduced by J.C. Bose in 1898, and gained considerable attention from the mid-1980s. The term chirality itself was coined by Lord Kelvin in 1873.

The word “racemic” is derived from the Latin word “racemus” for “bunch of grapes”; the term having its origins in the work of Louis Pasteur who isolated racemic tartaric acid from wine.

Symmetry

The symmetry of a molecule (or any other object) determines whether it is chiral. A molecule is achiral (not chiral) when an improper rotation, that is a combination of a rotation and a reflection in a plane perpendicular to the axis of rotation, results in the same molecule (see chirality [mathematics]). A simplified, if incomplete, rule is that a chiral molecule lacks a plane of symmetry. For tetrahedral molecules, the molecule is chiral if all four substituents are different.

A chiral molecule is not necessarily asymmetric (devoid of any symmetry element), as it can have, for example, rotational symmetry.

Naming conventions

By configuration: R- and S-

For chemists, the R/S system is the most important nomenclature system for denoting enantiomers, which does not involve a reference molecule such as glyceraldehyde. It labels each chiral center R or S according to a system by which its substituents are each assigned a priority, according to the Cahn Ingold Prelog priority rules (CIP), based on atomic number. If the center is oriented so that the lowest-priority of the four is pointed away from a viewer, the viewer will then see two possibilities: If the priority of the remaining three substituents decreases in clockwise direction, it is labeled R (for Rectus), if it decreases in counterclockwise direction, it is S (for Sinister).

This system labels each chiral center in a molecule (and also has an extension to chiral molecules not involving chiral centers). Thus, it has greater generality than the D/L system, and can label, for example, an (R,R) isomer versus an (R,S) — diastereomers.

The R/S system has no fixed relation to the (+)/(−) system. An R isomer can be either dextrorotatory or levorotatory, depending on its exact substituents.

The R / S system also has no fixed relation to the D/L system. For example, the side-chain one of serine contains a hydroxyl group, -OH. If a thiol group, -SH, were swapped in for it, the D/L labeling would, by its definition, not be affected by the substitution. But this substitution would invert the molecule's R / S labeling, because the CIP priority of CH2OH is lower than that for CO2H but the CIP priority of CH2SH is higher than that for CO2H.

For this reason, the D/L system remains in common use in certain areas of biochemistry, such as amino acid and carbohydrate chemistry, because it is convenient to have the same chiral label for all of the commonly occurring structures of a given type of structure in higher organisms. In the D/L system, they are nearly all consistent - naturally occurring amino acids are nearly all L, while naturally occurring carbohydrates are nearly all D. In the R / S system, they are mostly S, but there are some common exceptions.

By optical activity: (+)- and (−)-

An enantiomer can be named by the direction in which it rotates the plane of polarized light. If it rotates the light clockwise (as seen by a viewer towards whom the light is traveling), that enantiomer is labeled (+). Its mirror-image is labeled (−). The (+) and (−) isomers have also been termed d- and l-, respectively (for dextrorotatory and levorotatory). Naming with d- and l- is easy to confuse with D- and L- labeling.

By configuration: D- and L-

An optical isomer can be named by the spatial configuration of its atoms. The D/L system does this by relating the molecule to glyceraldehyde. Glyceraldehyde is chiral itself, and its two isomers are labeled D and L (typically typeset in SMALL CAPS in published work). Certain chemical manipulations can be performed on glyceraldehyde without affecting its configuration, and its historical use for this purpose (possibly combined with its convenience as one of the smallest commonly used chiral molecules) has resulted in its use for nomenclature. In this system, compounds are named by analogy to glyceraldehyde, which, in general, produces unambiguous designations, but is easiest to see in the small biomolecules similar to glyceraldehyde. One example is the amino acid alanine, which has two optical isomers, and they are labeled according to which isomer of glyceraldehyde they come from. On the other hand, glycine, the amino acid derived from glyceraldehyde, has no optical activity, as it is not chiral (achiral). Alanine, however, is chiral.

The D/L labeling is unrelated to the (+)/(−); it does not indicate which enantiomer is dextrorotatory and which is levorotatory. Rather, it says that the compound's stereochemistry is related to that of the dextrorotatory or levorotatory enantiomer of glyceraldehyde — the dextrorotatory isomer of glyceraldehyde is, in fact, the D-isomer. Nine of the nineteen L-amino acids commonly found in proteins are dextrorotatory (at a wavelength of 589 nm), and D-fructose is also referred to as levulose because it is levorotatory.
A rule of thumb for determining the D/L isomeric form of an amino acid is the “CORN” rule. The groups:

\[
\text{COOH, } R, \text{ NH}_2 \text{ and H (where R is a variant carbon chain)}
\]

are arranged around the chiral center carbon atom. Sighting with the hydrogen atom away from the viewer, if these groups are arranged clockwise around the carbon atom, then it is the D-form. If counter-clockwise, it is the L-form.

**Nomenclature**

- Any non-racemic chiral substance is called scalemic.
- A chiral substance is enantiopure or homochiral when only one of two possible enantiomers is present. A chiral substance is enantioenriched or heterochiral when an excess of one enantiomer is present but not to the exclusion of the other. Enantiomeric excess or ee is a measure for how much of one enantiomer is present compared to the other. For example, in a sample with 40% ee in R, the remaining 60% is racemic with 30% of R and 30% of S, so that the total amount of R is 70%.

**Stereogenic centers**

In general, chiral molecules have point chirality at a single stereogenic atom, usually carbon, which has four different substituents. The two enantiomers of such compounds are said to have different absolute configurations at this center. This center is thus stereogenic (i.e., a grouping within a molecular entity that may be considered a focus of stereoisomerism).

Normally when an atom has four different substituents, it is chiral. However in rare cases, two of the ligands differ from each other by being mirror images of each other. When this happens, the mirror image of the molecule is identical to the original, and the molecule is achiral. This is called pseudochirality.

A molecule can have multiple chiral centers without being chiral overall if there is a symmetry between the two (or more) chiral centers themselves. Such a molecule is called a meso compound.

It is also possible for a molecule to be chiral without having actual point chirality. Common examples include 1,1′-bi-Z-naphthol (BINOL) and 1,3-dichloro-allene, which have axial chirality, (E)-cyclooctene, which has planar chirality, and certain calixarenes and fullerene compounds, which have inherent chirality.

It is important to keep in mind that molecules have considerable flexibility and thus, depending on the medium, may adopt a variety of different conformations. These various conformations are themselves almost always chiral. When assessing chirality, a time-averaged structure is considered and for routine compounds, one should refer to the most symmetric possible conformation.

When the optical rotation for an enantiomer is too low for practical measurement, it is said to exhibit cryptochirality.

Even isotopic differences must be considered when examining chirality. Replacing one of the two 1H atoms at the CH2 position of benzyl alcohol with a deuterium (2H) makes that carbon a stereocenter. The resulting benzyl-α-δ alcohol exists as two distinct enantiomers, which can be assigned by the usual stereoechemical naming conventions. The S enantiomer has [α]D = +0.715°.

**Properties of enantiomers**

Normally, the two enantiomers of a molecule behave identically to each other. For example, they will migrate with identical Rf in thin layer chromatography and have identical retention time in HPLC. Their NMR and IR spectra are identical. However, enantiomers behave differently in the presence of other chiral molecules or objects. For example, enantiomers do not migrate identically on chiral chromatographic media, such as quartz or standard media that have been chirally modified. The NMR spectra of enantiomers are affected differently by single-enantiomer chiral additives such as Eufod.

Chiral compounds rotate plane polarized light. Each enantiomer will rotate the light in a different sense, clockwise or counterclockwise. Molecules that do this are said to be optically active.

Chirality is a characteristic of different enantiomers of chiral compounds often taste and smell differently and have different effects as drugs – see below. These effects reflect the chirality inherent in biological systems.

One chiral ‘object’ that interacts differently with the two enantiomers of a chiral compound is circularly polarised light: An enantiomer will absorb left- and right-circularly polarised light to differing degrees. This is the basis of circular dichroism (CD) spectroscopy. Usually the difference in absorptivity is relatively small (parts per thousand). CD spectroscopy is a powerful analytical technique for investigating the secondary structure of proteins and for determining the absolute configurations of chiral compounds, in particular, transition metal complexes. CD spectroscopy is replacing polarimetry as a method for characterising chiral compounds, although the latter is still popular with sugar chemists.

**In biology**

Many biologically active molecules are chiral, including the naturally occurring amino acids (the building blocks of proteins), and sugars. In biological systems, most of these compounds are of...
the same chirality: most amino acids are L and sugars are D. Typical naturally occurring proteins, made of L amino acids, are known as left-handed proteins, whereas D amino acids produce right-handed proteins.

The origin of this homochirality in biology is the subject of much debate. Most scientists believe that Earth life’s “choice” of chirality was purely random, and that if carbon-based life forms exist elsewhere in the universe, their chemistry could theoretically have opposite chirality. However, there is some suggestion that early amino acids could have formed in comet dust. In this case, circularly polarised radiation (which makes up 17% of stellar radiation) could have caused the selective destruction of one chirality of amino acids, leading to a selection bias which ultimately resulted in all life on Earth being homochiral.

Enzymes, which are chiral, often distinguish between the two enantiomers of a chiral substrate. Imagine an enzyme as having a glove-like cavity that binds a substrate. If this glove is right-handed, then one enantiomer will fit inside and be bound, whereas the other enantiomer will have a poor fit and is unlikely to bind.

D-form amino acids tend to taste sweet, this enhances the sweet effect of dextrose. Whereas L-forms are usually tasteless, or in the case of fructose less sweet in flavor but more dynamic in variation. Spearmint leaves and caraway seeds, respectively, contain L-carvone and D-carvone - enantiomers of carvone. These smell different to most people because our olfactory receptors also contain chiral molecules that behave differently in the presence of different enantiomers.

Chirality is important in context of ordered phases as well, for example the addition of a small amount of an optically active molecule to a nematic phase (a phase that has long range orientational order of molecules) transforms that phase to a chiral nematic phase (or cholesteric phase). Chirality in context of such phases in polymeric fluids has also been studied in this context.

**In inorganic chemistry**

*Main article: Complex Chemistry*

Many coordination compounds are chiral; for example, the well-known tris(bipyridine)ruthenium(II) complex in which the three bipyridine ligands adopt a chiral propeller-like arrangement.

In this case, the Ru atom may be regarded as a stereogenic center, with the complex having point chirality. The two enantiomers of complexes such as [Ru(2,2’-bipyridine)3]2+ may be designated as \( \Lambda \) (left-handed twist of the propeller described by the ligands) and \( \Delta \) (right-handed twist). Hexol is a chiral cobalt complex that was first investigated by Alfred Werner. Resolved hexol is significant as being the first compound devoid of carbon to display optical activity.

**Chirality of amines**

Tertiary amines (see image) are chiral in a way similar to carbon compounds: The nitrogen atom bears four distinct substituents counting the lone pair. However, the energy barrier for the inversion of the stereocenter is, in general, about 30 kJ/mol, which means that the two stereoisomers are rapidly interconverted at room temperature. As a result, amines such as NHRR’ cannot be resolved optically and NHRR’R” can only be resolved when the R, R’, and R” groups are constrained in cyclic structures as in Tröger’s base.

- Stereochemistry for overview of stereochemistry in general
- Axial chirality
- Supramolecular chirality
In carbon based compounds, chirality is present when a carbon atom has four different chemical groups attached to it. There are then two possible optical isomers. The molecular formula is identical, but the orientation of two chemical groups is different, as they are mirror images of each other. The two isomers can be distinguished by shining a beam of polarised light on the compounds and measuring rotation with a polarimeter.

One optical isomer will rotate the plane of polarised light to the right and the other optical isomer will rotate it to the left. The right handed molecule is called RECTUS or DEXTRO and the left handed molecule SINISTER or LEVO.

Some common examples of optical isomers are sugars and amino acids. All naturally occurring sugars are right handed (for example dextrose which is D-glucose) and all naturally occurring amino acids are left handed (for example L-phenylalanine). Why life has evolved to favour just one isomer of each of these is a mystery, but the enzymes responsible for metabolising these nutrients can only recognise the naturally occurring form of each.

Other examples of optical isomers which we can distinguish between are found in the plant hydrocarbons carvone and limonene. S-carvone smells like caraway and is the major component of caraway oil. R-carvone however smells like spearmint and is the principle constituent of spearmint oil. Some oils like gingergrass oil contain a mixture of both optical isomers. D-limonene is found in the rind of citrus fruits and is responsible for the orange/lemon smell.

L-limonene however has a piny, turpentine like smell. Our smell receptors are obviously able to detect a difference between the two optical isomers.

Spirals or helices in nature can also show chirality. The DNA double helix in the nucleus of a cell is always a right handed helix. This means it turns in a clockwise direction when travelling away from you. However the collagen triple helix in connective tissue is always a left handed helix. This means it turns in an anticlockwise direction when travelling away from you. You can check whether any helix has a right or left handed turn by using these definitions - try it yourself on spiral staircases, corkscrews, fusilli pasta and even knitting yarn. It doesn’t matter which end of the helix you start from, the handedness is true from either end.

Climbing plants are also good examples of helices in nature. The shoots of some plants such as honeysuckle twist to the right (clockwise) whereas the shoots of others such as bindweed twist to the left (anticlockwise). The doomed marriage of these two plants was the subject of the classic song “Misalliance” by Flanders and Swann. External conditions such as humidity, light, heat or the earth’s hemisphere cannot alter this handedness of climbing as it is genetically determined. In fact the Latin name of the ubiquitous climbing plant Common Ivy is Hedera helix, which itself means twisting.

The soft curly tendrils of clinging plants such as grape vines and beans however, can have their helices reversed when the tendril touches a support. This so-called “tendril perversion” fascinated Charles Darwin and he wrote about it at length in his book “The Movements and Habits of Climbing Plants”. When the tendril starts to curl and tighten up, since neither the stem nor the support can rotate, the total twist in the tendril cannot change. Therefore, as the tendril curls on itself, the coils of the spiral are reversed at some point and the two opposite spirals are separated by a small straight segment. This phenomenon can be likened in the modern sense to a coiled telephone cable, which is first completed extended, untwisted and then slowly released. A spiral inversion will appear, usually with annoying snarls.

There are many examples of handedness in synthetic molecules as well all right handed - try looking on the labels of toiletries, household chemicals and medicines when you go shopping. And the next time anyone asks “Do you take sugar?” you can reply “Yes, but only if it’s left handed !”

**Literature**


Negative refraction. (a) shows an empty glass, (b) a glass filled with an ordinary medium with positive refractive index, such as water; the straw inside the glass is refracted. (c) shows what would happen if the water is replaced by a negatively refracting medium. From the Nanophotonics group at the Karlsruhe Institute of Technology.

Left-handed (or negatively-refracting) materials turn out to transform space for electromagnetic fields and their vacuum fluctuations [2,10].
References on Quantum Handedness


See e.g. E. Buks and M. L. Roukes, Quantum physics: Casimir force changes sign, *Nature* 419, 119

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11. New Scientist, 2005


SUGAR: you just love your children to death

Gregory Grosbard of Miami, Florida received a U.S. patent on a process to improve the strength of plastic by using sugar. Each time plastic goes through a heat cycle, it loses strength because oxygen in the atmosphere goes into the material and creates oxygen “holes.” Mr. Grosbard found that, by mixing a small amount of sugar into the plastic material during the heat cycle, the sugar grabbed the oxygen first, preventing the oxygen holes and making the plastic stronger.

Research has shown that:

• Processed sugar blocks the absorption of calcium.
• Processed sugar produces a low oxygen environment.
• Processed sugar is extremely acidic.
• Too much processed sugar is the death of the immune system. It interrupts the Kreb’s energy cycle which in turn suppresses your immune system’s manufacture of killer cells and antibodies.
• Processed sugar depletes B vitamins which is needed by the liver to detoxify it. The liver is the most important organ when it comes to healing the body.
• Sugar does stop hiccups. The New England Journal of Medicine published the results of a study that used sugar successfully to stop hiccups in 19 out of 20 people; some of whom had been hiccupping for as long as 6 weeks.

Cancer has become the number one “killer disease in children” in the past few years. Sugar consumption is robbing the oxygen out of their little bodies and making their cells extremely acidic while shutting off their immune systems. Sugar averages for children are around 36 teaspoons a day.

The next time you feel like having a soda, just think about this: Colas are extremely acidic with a pH of approximately 2.5. It takes 32 glasses of water with a pH of 10 to neutralize that one cola.

And, keep in mind that most water is relatively neutral with a pH of 7.2; water with a pH of ten is approximately one thousand times more alkaline than your run of the mill glass of water.

The other night the news showed a small boy who had just had chemotherapy. His face and eyes showed the horrors he had been through and he appeared to be lifeless and unwilling to live due to being physically destroyed by the poisons (mustard gas). His doctor and loved ones stood over him with a vanilla milk shake in an effort to make him feel better. They were giving him more acid elements (milk shake - sugar) causing his cellular pH to drop more into the pH range that cancer needs to survive within. God forbid.

Alas, I cannot recommend the use of sugar substitutes such as Nutrasweet, which is made from aspartame. Aspartame is 10% wood alcohol – which your body metabolizes into various carcinogens! (One of them is DKP—which may cause brain tumors.) Fully three-quarters of all non-drug complaints to the FDA involve aspartame. Complaints include headaches, dizziness, mood changes, numbness, vomiting, nausea, muscle cramps and spasms, abdominal pain, vision problems, skin lesions, memory loss and seizures.

You are the only one who change the circumstances that are slowly destroying you and your children. Although we can give you information, ultimately you are responsible for your health. Use sugar and allow it to steal the oxygen and calcium which depletes life and, bit by bit, weaken you and strengthen the environment that cancer needs to grow.

How Sugar Can Destroy Your Health and Cause Cancer, Diabetes, Neurological Disease and Vitamin/Mineral Deficiencies

By Keith Nemec, M.D.

A big problem with a typical American’s diet is sugar. Sugar in all forms - except in its natural state in fruits and vegetables - should be avoided because of the following.

1. It extremely weakens the immune system increasing the chances of developing cancer.
2. It depletes the body of valuable B vitamins.
3. It depletes the body of necessary minerals such as calcium, magnesium, etc.
4. Excesses lead to sugar diabetes, one of the top fatal diseases in the United States.
5. It causes weight gain and stress on the whole system, especially the heart.

Let’s take a closer look at each of these points.

1) Sugar weakens the immune system.

Sugar puts stress on the immune system. Animal studies show that such stress results in a decrease in white blood cells (WBCs), which prevent bacterial, viral, parasitic and fungal infections, and cancer. Our immune system’s most important fighters are WBCs, which prevent us from getting cancer. We all have cancerous cells developing in our bodies, but a healthy immune system - with macrophages (Pac-Man WBCs) and natural killer cells - keeps cancer in check. But in today’s toxic world, we are exposed to many cancer-producing agents from the outside, which weaken our white blood cells from the inside, a bad formula indeed.

In one study, three groups of mice were injected with an aggressive malignant mammary tumor.
Prior to injection the dietary induced blood sugar was altered to three different levels; high blood sugar, normal blood sugar and lower blood sugar. After 70 days 66% of the high blood sugar group had died, 33% of the normal blood sugar had died and only 5% of the lowered blood sugar group had died. This demonstrates that the less sugar in our system the more cancer and pathogen protective we become.

Remember this: Greater Toxic Load + Weakened Immune System (WBCs) = Disease (especially cancer).

Your motto in detoxifying is, “Get the bad (toxins/chemicals) out of the system and get the good in,” such as nutrients, vitamins, minerals, enzymes, antioxidants and phytochemicals.

A 12-ounce can of regular pop can reduce the ability of WBCs to eat bacteria by 40 percent for up to six hours. That means that if you drink pop and eat other sugars, your body’s defenses are down. If someone sneezes around you, or you rub your eyes or mouth with your hands, you’re highly susceptible to contract the bacteria or virus. Similarly, cancer starts to grow when WBCs are being suppressed with sugar; other dietary factors, stress, etc.

2) Sugar depletes the body of valuable B vitamins.

27 B vitamins are essential for many bodily functions, too many to list here. A vitamin B deficiency can cause many problems, including:

- neurological disease
- fatigue
- pernicious anemia (red blood cells affected)
- blood sugar problems
- congestive heart failure
- allergies
- memory loss
- depression
- skin and tongue problems

Whenever we strip our sugars and flours - the manufacturers call it “refining” - to make them white, we’re taking away what God gave them to be a balanced food. Whole wheat, for instance, has B vitamins together with the starches that break down into sugar, so we do not become deficient eating it. On the other hand, white bread, like white sugar, has been stripped of essential B vitamins, so the body in turn draws them from other places - like nerves - to metabolize the refined sugars that have been eaten.

REFINING GRAINS

Grains are energy powerhouses and have an abundance of vitamins, minerals, fiber, phytochemicals, enzymes and bioelectricity. Grains should primarily be eaten sprouted and alive or by making sprouted grain uncooked bread that is dehydrated at a temperature under 110 degrees Fahrenheit. Grains can also be grown into greens like wheat grass and barley grass and then juiced for even higher contents of all of the above, along with a high concentration of oxygen that they bring to your body because of the live chlorophyll.

But how does the average American eat grains? They have been cooked, refined and processed to make refined breads and pasta. They have lost all their enzymes, bioelectricity, oxygen - the three most important elements in any food source, and nearly all their vitamin, mineral, phytochemical and fiber content. The manufacturers of these products then-to satisfy the consumer quest for trying to get enough vitamins and minerals- add back synthetic vitamins and inorganic minerals that at the very best are non-absorbable and at the very worst are toxic. You the unsuspecting consumer read the white or pseudo wheat bread package and it says “fortified” or “enriched” with 100 percent of the recommended daily allowance of all these vitamins and minerals and you think, “great, I am eating healthy bread.” In fact you are eating a sticky gluey clogging anti-nutrient that will cause not only a slow decline of your general health, but that will cause very specific respiratory and digestive and absorptive problems due to the wheat gluten that remains after processing.

Here’s what happens during the refining and processing of a grain:

- 90% of fiber is lost
- 75-88% of trace minerals are lost
- almost all vitamins are lost
- 100% of enzymes are lost
- 100% of bioelectrical charge is lost
- 100% oxygen content is lost

To make our bread and pasta look pretty, chlorine bleaches are added to make the flour nice and white - these toxic chemicals are carcinogenic. What you are left with is a potentially toxic anti-nutrient that gives you nothing but empty calories. What is an anti-nutrient? An anti-nutrient uses up your nutrients instead of giving you nutrients. An example is eating an English muffin versus eating a banana.

1. 200 calorie English muffin needs three micrograms of chromium to be assimilated into the body. It only has one microgram, so the total comes up to 1-3 micrograms chromium = -2 micrograms or it takes away 2 micrograms of chromium form the chromium store in your body.

2. 200 calorie banana has 150 micrograms of chromium. It needs 3 micrograms to be assimilated into the body so 150-3 micrograms chromium = 147 micrograms.

This means the banana actually adds 147 micrograms of chromium to the body instead of taking away as the muffin did.

All these reasons are why refined grains are not healthy, but actually slowly destroying our health. A general rule is the more food you eat in the way God created the food the better your health will be - uncooked and living is best. The best grains to eat are non-gluten, sprouted forms like quinoa, millet and amaranth. These grains rarely cause any allergy or sensitivity and were the staple diet of the Aztec and Inca empires. Quinoa has been called the “Supergrain” because of its being a complete protein having all the essential amino acids needed for human health.

3) Sugar depletes the body of necessary minerals.

When sugar depletes our supply of valuable minerals like calcium and magnesium, this can result in osteoporosis, arthritis and a host of mineral-deficient symptoms like:

- leg cramps
- muscle tightness or spasms
- low blood sugar
- diabetes
- low blood pressure
• PMS
• low back pain
• learning disabilities
• ADD (Attention Deficit Disorder)
• depression
• asthma

In his book, Rare Earth’s Forbidden Cures, Dr. Joel Wallach states that sugar loads increase the normal rates of mineral loss in sweat and urine by 300 percent for 12 hours. So if you regularly eat sugar, no amount of supplementation or diet will allow you to keep up with your mineral losses.

4) Excess of sugar leads to sugar diabetes.

The average American consumes 100-150 pounds of sugar per year. Consequently, diabetes is the No. 7 cause of death in America. Our sweet tooth has cost us dearly. Interestingly, studies of the world’s people who live longest – such as Tibetans and Hunzas - indicate that degenerative diseases, including diabetes, are virtually unknown among these peoples. A probable cause of our high rate of diabetes is the high intake of refined sugar, in the form of white sugar (sucrose), corn syrup (fructose), and all others ending in “-ose.” David Reuben, M.D., states that “there is no doubt that diabetes mellitus - otherwise known as sugar diabetes - is caused by excessive consumption of refined sugar.”

5) Sugar causes weight gain and stresses the whole system.

Sugar’s empty calories quickly flood the bloodstream and are stored as fat, which can be a major contributor to the alarming number of obese adults and children in the United States today. This excess weight causes stress on the whole system, especially the heart, which has to pump harder to circulate the blood to all the “excess” tissue. The excessive weight also is a contributing factor in all major disease.

Bottom line: Cut down on the refined sugars and starches and add some sugar vegetables (yams, bell peppers, carrots) or fruit to your diet instead. You should be aware that the fruit today is hybrid for sweetness, being 30 times as sweet as it was created to be, so do not over eat fruit or it could negatively impact your blood sugar and your immune system.


For more information go to Total Health Institute www.totalhealthinstitute.com.
The Immune System- First of Two Parts

Peter J. Delves, Ph.D., and Ivan M. Roitt, D.Sc.

The immune system is an organization of cells and molecules with specialized roles in defending against infection. There are two fundamentally different types of responses to invading microbes. Innate (natural) responses occur to the same extent however many times the infectious agent is encountered, whereas acquired (adaptive) responses improve on repeated exposure to a given infection. The innate responses use phagocytic cells (neutrophils, monocytes, and macrophages), cells that release inflammatory mediators (basophils, mast cells, and eosinophils), and natural killer cells. The molecular components of innate responses include complement, acute-phase proteins, and cytokines such as the interferons. Acquired responses involve the . . .

- Three Levels of Defense
- Innate Immune Recognition
- Innate Immune Responses
- Cellular Components of Innate Responses
- Soluble Factors in Innate Defense
- The Acute Inflammatory Response
- Acquired Immune Responses
- The Structure of Antigen-Specific Molecules
- The B-Cell Receptor and Soluble Antibodies
- The T-Cell Receptor
- The Diversity of Antigen Receptors
- Clonal Selection
- Major Populations of B Cells
- T Cells and the Thymus
- Tolerance Mechanisms

Source Information
From the Department of Immunology, the Windesyer Institute of Medical Sciences, University College London, London.

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because of their long shelf life, their stability during deep-frying, and their semisolidity, which can facilitate the production of margarines, shortenings, and cooking oils. In the food industry, partially hydrogenated vegetable oils, or trans fats, are formed during the partial hydrogenation of vegetable oils, a process that converts vegetable oils into semisolid fats for use in margarines, commercial cooking, and manufacturing processes.

Trans fats, unsaturated fatty acids with at least one double bond in the trans configuration (Figure 1), are formed during the partial hydrogenation of vegetable oils, a process that converts vegetable oils into semisolid fats for use in margarines, shortenings, and cooking oils. From the perspective of the food industry, partially hydrogenated vegetable oils are attractive because of their long shelf life, their stability during deep-frying, and their semisolidity, which can be customized to enhance the palatability of baked goods and sweets. The average consumption of industrially produced trans fatty acids in the United States is so large and out of control that it boggles the mind of the health care industry.

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produced sources and from natural sources have the same effect on cardiovascular disease.


82

83
Healthy Heart - Avoid Trans Fat

Second and final deadline for trans fat regulation is July 1, 2008!

On December 5, 2006, the Board of Health approved an amendment to the Health Code to phase out artificial trans fat in all NYC restaurants and other food service establishments. It is now in full effect.

The phase out of artificial trans fat in restaurant foods took effect in two stages. First, as of July 1, 2007, NYC food service establishments have been prohibited from using oils, shortening and margarine containing artificial trans fat for frying or as a spread that have 0.5 grams or more of trans fat per serving. The second and final deadline was July 1, 2008. As of July 1, 2008, all foods must have less than 0.5 grams of trans fat per serving if they have any artificial trans fat. Packaged foods served in the manufacturer’s original, sealed packaging are exempt.

Detailed information is available for food service establishments on how to comply with the new Trans fat regulation. To receive a printed brochure on the “Regulations to Phase Out Artificial Trans Fat in New York City Food Service Establishments”, please call 311.

Visit the Trans Fat Help Center website for information on how to replace artificial trans fat, Trans Fat with 0 grams trans fat products in your food service establishments.

Questions regarding trans fat violations should be directed to the Bureau of Food Safety at the Health Department by calling 311.

Learn more about the amendment to phase out artificial trans fat in New York City food service establishments.

Page Contents

• Consumer Information
• Restaurant and Food Service Information
• Food Supplier and Supermarket Information
• Health Care Provider Information
• Scientific Research

Trans fat in your diet increases your risk of heart disease - New York City’s biggest killer. Many restaurant and store bought foods contain trans fat - including fried foods, baked goods, margarine and vegetable shortening, and snack foods. The New York City Department of Health and Mental Hygiene’s Trans Fat Education Campaign aims to educate consumers, city restaurants and other food service establishments about why trans fat is bad for your heart and how to avoid it.

Consumer Information

Consumers can avoid trans fat in supermarkets by checking the Nutrition Facts panel on food labels to choose foods with 0 grams trans fat.

Why do I see “0 Grams Trans Fat” on food packages when I also see “partially hydrogenated oil” as an ingredient in the ingredient list?
Food companies can list the amount of trans fat as ‘0 g’ on the Nutrition Facts panel and/or claim “Zero or No Trans Fat” if the amount of trans fat per serving is less than 0.5 grams. If you see both “0 g trans fat” and “partially hydrogenated oil,” the food product contains less than 0.5 g of trans fat per serving. Learn more about the dangers of trans fat and how you can reduce your intake by clicking on:

- Health Bulletin #43: Choose Foods With 0 Grams Trans Fat (Other languages: [Español])
- Learn more about cholesterol (Other languages: [Español])

Other Resources for Consumers:

- U.S. Food and Drug Administration
  - Revealing Trans Fat
  - Questions and Answers about Trans Fat Food Labeling
  - What Every Consumer Should Know About Trans Fatty Acids
- Harvard School of Public Health Fat and Cholesterol
- American Heart Association
- International Food Information Council: (in English and Spanish)

Restaurant and Food Service Information

The Trans Fat Help Center offers NYC food service establishments information on how to replace trans fat, FREE classes; and information on 0 grams trans fat products. Call 311 and ask for the “Trans Fat Helpline” or go to: notransfatnyc.org

Food Supplier and Supermarket Information

Products that often contain artificial trans fat include commercial vegetable cooking oils that are partially hydrogenated, as well as packaged foods made with partially hydrogenated vegetable oil, such as pre-fried vegetables (e.g., French fries, fried zucchini, etc.), pre-fried chicken and fish (e.g., chicken nuggets, fish fillets, etc.), baked goods (e.g., hamburger buns, cakes, cookies, pies, crackers, etc.), pre-mixed foods (e.g., croissant dough, pancake mix, salad dressing, hot chocolate mix, etc.) and snack foods (e.g., potato, corn and tortilla chips; candy; packaged and microwave popcorn; and doughnuts).

Food Suppliers

Be aware of which products are made with partially hydrogenated vegetable oil so that you can assist restaurants and other food service establishments in choosing 0 grams trans fat products.

The Trans Fat Help Center offers NYC food service establishments and their suppliers information free of charge on how to replace artificial trans fat, Trans Fat 101 classes, and information on 0 grams trans fat products. Call 311 and ask for the “Trans Fat Helpline” or go to: notransfatnyc.org

Supermarkets

Help your customers avoid artificial trans fat by promoting products made without partially hydrogenated vegetable oils. Read the ingredient lists and feature those with 0 grams trans fat.


Health Care Provider Information

Trans fat consumption raises LDL cholesterol and is associated with coronary heart disease. If a product contains partially hydrogenated vegetable oil, it contains artificial trans fat. Given the scientific consensus on the relationship between trans fat intake and heart disease, the new federal Dietary Guidelines recommend that trans fat intake be kept as low as possible. Counsel your patients on how to avoid foods containing artificial trans fat - and choose heart-healthy alternatives.

More information

Dietary recommendations


For your patients

- Health Bulletin #43: Choose Foods With 0 Grams Trans Fat
- Health Bulletin #42: Control Your Cholesterol: Keep Your Heart Healthy Order copies for your office by calling 311
- Teach your patients how to spot trans fat with this sample ingredient list and nutrition facts panel

Medical literature:


Scientific Research

Fruitarian definition of fruit

Commonly the term “fruit” is used when referring to plant fruits that are sweet, fleshy and contain seeds within the plant fruit (for example, plums, apples, and oranges). However, there are other foods that are not typically considered to be fruits in a culinary sense but are botanically, such as berries, bell peppers, eggplant, tomatoes, cucumbers, nuts and grains.

Fruitarianism is a lifestyle and dietary philosophy emphasizing foods that are fruits in a botanical sense. Some fruitarians use differing definitions of what is considered a “fruit.” For example, Herbert M. Shelton, a founder of Orthopathy, included non-fleshy fruits, such as nuts, within the definition of fruit.

Definition of fruitarian

Some fruitarians will eat only what falls (or would fall) naturally from a plant; that is: foods that can be harvested without killing the plant. These foods consist primarily of culinary fruits, nuts, and seeds. According to author Adam Gollner, some fruitarians eat only fallen fruit. Some do not eat grains, believing it is unnatural to do so, and some fruitarians feel that it is improper for humans to eat seeds as they contain future plants, or nuts and seeds, or any foods besides juicy fruits. Others believe they should eat only plants that spread seeds when the plant is eaten. Others eat seeds and some cooked foods. Some fruitarians use the botanical definitions of fruits and consume pulses, such as many beans and peas or legumes, or pulses and legumes. Still further definitions include raw fruits, dried fruits, nuts, honey and olive oil, or fruits, nuts, beans and chocolate

Scientific studies

Dental studies

In 1979, Professor Alan Walker, a Johns Hopkins University paleoanthropologist reported that preliminary studies of unmarked tooth enamel in early hominoids suggested that pre-human ancestors apparently had a diet of mostly fruit. Walker said, “I don’t want to make too much of this yet. But it is quite a surprise.” The Price Potinger Institute has lots of work validating the concept of fruitarianism’s healthy aspect for good dental health.

Clinical studies

In 1971, a short-term study by B. J. Meyer was published in the South Africa Medical Journal describing how lipid profiles and glucose tolerances improved on a particular fruitarian diet. An earlier 1971 study by Meyer tested a 45 year old teacher who claimed she had eaten only fruits and seed products for the past 12 years, who was found to be in “excellent health”. The study confirmed that body weights of overweight subjects showed a tendency to “level off” at the “theoretically ideal” weight when on a fruitarian diet.

Nutritional concerns

Nutritional deficiencies

As a very great vegan diet, fruitarianism is highly restrictive, making nutritional adequacy difficult. The Health Promotion Program at Columbia University reports that a fruitarian diet can cause deficiencies in calcium, protein, iron, zinc, vitamin D, most B vitamins (especially B12), and essential fatty acids. Additionally, the Health Promotion Program at Columbia reports that food restrictions in general may lead to hunger, cravings, food obsessions, social disruptions and social isolation. The body can make calcium from potassium if there is a degree of spiritual purity. So to be a fruitarian takes some degree of mental and emotional control.

Vitamin B12

Vitamin B12, a bacterial product, is not found in any fruits. According to the U.S. National Institutes of Health “natural food sources of vitamin B12 are limited to foods that come from animals.” Like raw vegans who do not consume B12-fortified foods (certain plant milks and breakfast cereals, for example), fruitarians may need to include a B12 supplement in their diet or risk vitamin B12 deficiency. The body can make B12 if the bowel flora is perfect and the intrinsic factor from the stomach lining is present. But only if both need to be perfect.

Motivation

Some fruitarians believe fruitarianism was the original diet of humankind in the form of Adam and Eve based on Genesis 1:29. They believe that a return to an Eden-like paradise will require simple living and a holistic approach to health and diet. Some fruitarians wish, like Jains, to avoid killing anything, including plants, and refer to Ahimsa fruitarianism. Some fruitarians say that eating some types of fruit does the parent plant a favor and that fleshy fruit has evolved to be eaten by animals, to achieve seed dispersal. So we have an environmental symbiosis and sharing the planet.
Growth & development issues
In children, growth and development are at risk. Nutritional problems include severe protein energy malnutrition, anaemia and a wide range of vitamin and mineral deficiencies. Several children have died as the result of being fed fruitarian diets. As a result, children have been taken from parents feeding them fruitarian diets.

Lifestyle difficulties
Lack of protein in fleshy fruit can make the lifestyle difficult to sustain, and can lead to the condition of hypoproteinemia or kwashiorkor. However nuts, sprouts and legumes, if included, are good sources of protein. Due to the lower digestibility of plant proteins, the American Dietetic Association (ADA) states “protein needs might be higher than the RDA (when) dietary protein sources are mainly those that are less well digested, such as some cereals and legumes.”

Sugar Wars
How You Can Win
Big sugar dominates with Synthetically refined sugar products being put into almost all of our foods. There is a war between refined dextrose and refined SYNthetic fructose as to which is bad for you. Answer; both are bad and both make disease. Natural fruits are not discussed much but to make sure you don’t lose this war this article might help you.

Dextrose (white table sugar) and levulose (fruit sugars, fructose) are basically the same only one is left handed and the other right handed. This means they divert photon right or left. Both have hot electrons to be made into energy as ATP. The hot electrons are made by the sun’s photons using Quantum Electro Dynamics principles, not described in Newtonian Thermodynamic theory. If this energy is not used for metabolism the body can store it as fat for use latter. This is how we get fat from eating too many calories especially sugars and carbohydrates. So both sugars can make fat if taken in excess.

Dextrose enters into cells very fast and thus creates hyperglycemia followed by hypoglycemia. This up and down cycle of blood sugar makes for lowered immune function, nervous irritation and a host of diseases. Levulose has to be converted in the liver to Dextrose-glucose and it takes time so hyper hypo-glycemic diseases are not so great a factor. If the liver cannot handle the levulose fast enough the body will make fat from the levulose.

There is big money in making any sweetener since people like it this article can explain the problems in more clear fashion. Big white Sugar has a lot invested in keeping it vast business, so it has financed and manipulated research against Fructose. The research has focused on high fructose corn syrup products and they have extensive research on the dangers of the high fructose corn syrup products. It needs to be quickly pointed out that this research was not done of fruits and direct fruit sugars.

There are other factors needed for us to intake sugars. Nature combines the sugars with fiber (the fruit pulp) for brush border electrical stimulation of absorption of minerals and vitamins that nature also supplies with the sugars. These vitamins and minerals are needed for the proper steps of the energy cycle (Krebs or other) to use the sugar to make the ATP. There is no good evidence of using fruits linked to major disease. In fact 5 a day campaigns tell us the truth that some fruit a day is good for us.

5 servings of fruits and vegetables a day is the best way to keep healthy. But limit the size of a serving. Water is the most needed nutrient after air. We all need good water to live. But if you drink 3 liters in 30 minutes it will make you sick. If you drink 3 gallons in an hour it will kill you. The dose determines effect. So if you overdose on fruits it can make you sick, this is possible but difficult. Fruit juice can be more of a problem if over consumed.

Later we will outline more correct guidelines for you to follow. But recognize that Big Sugar does not want you to read this book. they want you to believe that they are the only place to get sugars.

First and foremost we must understand that processed sugar in its many forms is responsible and or associated for more than 85% of the sickness in our society. Societies before sugar have dramatically less sickness, less degenerative disease, less dental problems, less work loss; while processed sugar free societies or families enjoy greater health, added mental acuity, more sport
achievement, more beauty. If we read the tabloids for the articles on what the Quote Beautiful People eat we see they don’t eat excess processed sugar. Fruits and vegetables are the key. The Old adage:

An Apple a day can help keep the doctor away.

Juicing removes most fiber and modern juicing produces too concentrated a fructose solution. So dilute your 100% natural juices for best most healthy use. More on apples later

The major problem for sugar starts with the idea that man can improve on nature. Nature adds mineral, vitamins and a complex fractal extensive list of various compounds. Reductionism only believes in the key ingredient and they reduce everything down in some industrial process. The society at the time of the beginning of sugar was afraid of black and brown things especially people. No substance hurt the black people more than sugar. Cotton and tobacco do not have anywhere near the history of social prejudice abuse that Big Sugar has and yet the people had to have white sugar. The processing using mustard gas components and very toxic items strip nutrients and bulk from nature. To make it white they had to remove all good enzymes, vitamins, minerals, and nutrition. Reducing nature to a quote “refined” sugar. High fructose corn syrup is the same, a bastardization of nature. As a further bastardization some totally unscrupulous people take white sugar and dye it brown to sell to you as brown sugar.

SINthetic processing is the problem not natural fructose.

The first step in health is to shun and limit exposure to processed white sugars either dextrose of levulose (fructose).

But sometimes you need some processed sugar. The white fructose is not so bad in small amounts. It is only in large amounts where the liver is overloaded and the body stores the sugars as fats. So if you do not want the immune suppressing effects of white table sugar and your liver is healthy and you cannot find fruit for sweetener, then use small amounts of the white corn fructose.

Fructose is very soluble so if you want some dissolved sugar in your coffee or tea a small teaspoon of white corn fructose is not bad. You could use fruit sugars for this like concentrated apple juice or a cinnamon stick. Try this it makes a good coffee. But a touch of corn syrup fructose is not a problem. There is some evidence that this corn fructose adversely effects your hunger, so be careful. Use this in cooking one half what is required of normal sugar. And make portions small of whatever you make.
Mankind has for over 99.99% of its history existed on fruits and seed products. Roaming from bush to bush, eating new items as the seasons change. Being too slow to catch lunch, not having fire to cook with, or even containers to store foods in. People lived on plants. It is possible to eat too many fruits but is very difficult and very rare. The pulp and fruit fiber make eating too much fruit almost impossible. Do not fear eating fruit and making foods from fruit. I give you some of my best recipes for making snacks with fruit.

Fruits are our natural source of sugars. These are sweet and tasty and it is only marketing and addictive behavior that makes sugar needed over fruits. I often ask my patient if you were lost in the desert for three days and came out hungry, if I gave you some apples would you say No Thanks I will wait for a candy bar? Of course not. The only need for the candy bar over the apple is addictive behavior. Next tip:

**Use fruit for your sugars**

Whenever or wherever possible

Put berries into a blender and make syrup for your pancakes. You will find it wonderful and much healthier. Fruits show so little problems even if taken in large doses. Make deserts with whole fruits and add no sugar. Fruits are part of you five a day way to health.

Then with the advent of juicing; now when the pulp and fiber are reduced, the fructose is very water soluble and thus is concentrated into the juice. Now as we can see later in the articles fructose excess can occur. This is still a small problem with natural juices but there are warnings.

So our next tip is:

**Use 100% fruit juice (no sugar added) and dilute with good water one part juice to two parts water or 50/50 juice and water maximum. Water is needed and how little juice can you add to make it more palatable.**

Most of the weight loss problem in America and elsewhere comes from the excess calories from drinks. People have lost both the taste for water and the ability to know when their bodies are dehydrated. As they become addicted to the sugar flavor and the glycemic rush of sugar they want flavored water not boring water. We need to get back to water and if we need some flavor use a little bit of juice.

Next the sweet tooth comes from our ancestral need to find fruit. Fruit is what we need for health. The taste for sweet is on the tip of the tongue and we need fruit for the alkaline ash healthy part. This sweet taste can be overdone and create a desire for sugars instead of fruits.

The human race developed on fruits and vegetables then with the advent of weapons and fire meats were added to the menu. Warriors groomed for the hunt must be strong. Many thought meat would make them strong. In the Bible book of Daniel there was a challenge between the meat eaters of Nebekenezer the Babylonian king and Daniel’s men who ate pulse. Pulse comes from sprouted seeds made into grain. And Daniel’s men were stronger and more efficient in the hunt.

The advent of the white sugar products made a major down turn in the immune system and it caused the Black Death plague. Anyone who eats refined white sugar for the first time will find their resistance lowered. Today’s sugar holidays of Christmas, Halloween, Valentine’s day, Easter all bring with them lowered immune systems. This is mostly due to the combination effects of the dextrose on white blood cells, excess amounts of sugar, and the unnatural removal of the mineral and vitamin by products in the refining process.

Today our children are conditioned like Pavlov’s dog to crave sweets. We associate sugar with love. Our lovers are called sweet or candy names. Our Holidays are associated with the gift of candy. When a child is good we give him candy, when he is bad we take it away. The mental need for sugar and the psychological dependence on candy runs very deep into our society. Parents make desert a part of every meal. If you are good you get desert, if you are bad you get it anyway. Big Sugar does everything it can to perpetuate this dependence. The social and mental association of sugar to love and happiness coupled with quick rise in blood sugar makes this an addictive dependency that must be dealt with.

To get rid our addiction and dependency we need to increase awareness. Refined Sugar and Refined Sugar Candy is not love it is poison. It is not love to give someone something that makes the sick.
People are hypnotized to want candy. We must break this trance spell and dehypnotize them. We need to give them a new conditioned response to show love.

There is a hormonal connection of the gall bladder and the hypothalamus. When food is released from the stomach the gall bladder release CCK (CholeCystoKinin) this stimulates the gall bladder and this has an anti-depression effect on the brain. So eating sugar, which stimulates the gall bladder, has a small anti-depression effect. Chocolate has some similarities to oxytocin the bonding hormone. So the craving infatuation and dependence on sweets is very deeply instilled. The lobby groups for Big sugar are as big as they get and they do not care about health they care about profit. So even writing this book is a danger to their profits. But as you all know the Angel has a job to do and courage is part of the job. The next tip is:

Don’t buy the refined sugar products. If you don’t buy it in the store you don’t eat it at home. You must learn to read a label and to resist the marketing hold BIG SUGAR has on you and your children. If you buy it for one, the others will eat it.

We need to be able to get rid of the sweet tooth for processed sugar and replace it with desire for fruit. People like new and different. Think of it we say chocolate and vanilla are everyday and mundane. In fact they are both tropical plants not found in the north. At first these tropical flavors were new and exciting for northerners. They were expensive and then as the volume went up the need made importation in large volumes easy and the availability went up and the excitement went down. Now they are mundane. It is not the flavor that is so important but the mental excitement. This is how marketing works; to get your child to see an advertisement and be driven to want the special toy or special offer to them.

Teach our children to resist marketing. Marketing affects the eyes more than the taste. If you are blind folded and taste blue berries or other berry mash and compare it to your candy bar you can see the better flavor of nature. But it is all in the story you tell.

Teach their palate to like fruits. Make deserts with fruit and make your own refined sugar free foods. But some people can’t make their own and they need to find Health food stores who can.

Desire has come to De-Hypnotize the Masses. To set people free to think, challenge false beliefs, recognize that there is such a rapid change happening in the world today that it takes large effort to keep up with changes. We must be humble and not rigid with false beliefs. Desire has come to defeat the petty lizard brain and set us free.

Desire has the ability to expose false beliefs with a simple phrase, and then set the people's minds free from their mind control hypnosis.
Our children are hypnotized to like processed refined sugar. We need to break this mass hypnosis trance and get our children to return to fruit as the way to add sugars to our diet.

The best way to dehypnotize you and your children is through knowledge. When you learn how BIG SUGAR manipulates your mind you can start to be aware. Learn to avoid added sugar, corn syrup, fruit sugar drinks with added sugar, high fructose corn syrup, refined or processed sugars or carbohydrates.

Plan a task of physical or mental acuity and let your children perform it first in the clear, then after 15 minutes of a refined sugar candy bar, the 30 minutes after. They will see just how after 20 to 30 minutes your body is cranky and out of sorts from the refined sugar. The initial hyperglycemia up lasting 15 to 20 min. followed by over 90 minutes of a down hypoglycemia. Fruit does not do this.

Immature people do not consider the long time results but only the first reaction. The more mature you are the longer you can see into the future. Make your children more mature.

Most Americans get 15 to 20 % of their calories from Refined Sugar so here is a big Tip :

In an effort to help cut heart disease risk, the American Heart Association advises slashing added sugars to 5 per cent of daily calories – five teaspoons worth (80 calories) for women and 9 teaspoons (144 calories) for men. If you must consume refined sugars cut it down to only one half a candy bar a day, one soda, one processed small portion of a cake, one a day of any of these. As such a very small quantity, a healthy liver will process it and you will not get much disease from it. But it you want to be really healthy avoid it always.

Now for some recipes on how to get your children into fruit for their sweet tooth.

Dr. Desi’s FRUIT ROLL-UPS or FRUIT LEATHER(S)

Use any fruits you wish. To prepare the leather, wash fruit well and take out all seeds and pits. If using substandard specimens, cut out bad spots on skin. Drop fruits into the blender a few halves at a time with the dial set at puree. Continue until you have about 3 cups.

If using very ripe apricots, no sweetening is needed. If the fruit is very tart, add a different fruit for sweetness but if you must (and only if you must) add honey no more than 1 tablespoon and increasing only if absolutely necessary; 1/2 teaspoon of cinnamon, nutmeg, ginseng, ginger

Maturity

Maturity is the ability to judge the consequences of today’s positive actions and translate them into the future. The further you can see the positive effects of your behavior in the future, the more mature you are. The problem with people is that a very small minuscule reward now easily takes preference over a powerful punishment tomorrow. The cigarette today becomes more important than lying in a puddle of your own piss and shit anguish for each breath, expiring prematurely, leaving loved ones, and dying before ones time. Lack of care and maturity is the problem. Wellness is simply caring for oneself and Caring for your loved ones. Self Discipline is just as important as anything in Health and Wellness. Maturity and self Discipline also dictates the courage to stand against peer pressure and conventionality. Desiré stands for the fight for Health and Wellness. Desiré symbolizes this courage.

The intrepid fortitude to be one’s self and fight for Health Wellness Freedom
Variety is the Main Spice of Life.

Wild strawberry leather makes delicious nibbling and can be melted for a glaze to use on tarts. Use 2 pounds of strawberries, hulled, and 1/2 cup honey. In a saucepan, simmer the berries and honey if necessary over low heat, stirring and mashing the fruit as it cooks until it is as thick as you can get it. Spread on a flat dish and place in the sun to dry. Cut into squares and store in glass jars. Or, roll it like a jelly roll, then slice and store in glass jars.

To produce a paper-thin leather, lightly oil a cookie sheet, or cover it with a layer of foil or waxed food wrap. Spread puree 1/4 inch thick, smoothing with a spoon, if necessary, to cover evenly. Place in a 120 to 150 degree oven, leaving the door slightly ajar for steam to escape. Two cookie sheets can be put in the oven at the same time to utilize oven heat more efficiently.

If you prefer not to use the oven, spread the fruit blend on cookie sheets and dry outdoors in the sun. The amount of time it will take to dry will depend on the thickness of the puree and the outdoor temperature. If the sun is hot (and the temperature 80 degrees or more), drying will take approximately 8 to 10 hours. If the weather is cool and puree quite thick, it may take a week or two. Do not leave the puree outdoors overnight.

When the leather has hardened, ease the edge up. Peel off easily. Roll into a scroll, or into jelly-roll shape and place in a cloth or paper bag to continue drying for several days. The finished product, which should still be pliable like leather, can be stored in tightly closed glass jars, but make sure the rolls are completely dry. If they are not, the leather will mold. If the leather has dried to the brittle stage, you can soften it by placing a piece of apple in the jar for 2 or 3 days. This will give it some moisture.

Use any fruits you wish.

Dr. Desi’s Carrot (Fruit and Vegetable) Cake Recipe

(Makes 1 double-layer 9-inch square cake)

- 2 1/2 cups thinly sliced carrots (add some raisins, crushed dried fruits, bananas, zucchini strips or what you wish for variety)
- 2 1/2 cups 100% apple juice concentrate no added sugar (you may use slightly less)
- 1 1/2 cups raisins
- Vegetable Spray/Shortening
- 2 cups whole-wheat flour
- 1/2 cup vegetable oil (sunflower is my favorite with lots of vitamin E)
- 2 whole eggs
- 4 egg whites
- 1 tablespoon vanilla extract
- 3/4 cup unsweetened (no sugar) applesauce
- 1/2 cup wheat germ
- 2 Tbsp low sodium baking powder
- 1 Tbsp ground cinnamon

**The batter may be a bit dry and you may need to add more applesauce or a bit of water. Try adding 1/4 cup of applesauce first then gradually add a bit of water by tablespoon.**

We have added a bit of pure cocoa (2 tablespoons) to make a chocolate flavor.

Desi’s Apple Spice Cake

As with any “non/traditional” cake, the batter for this cake will not seem "right".

- 1/2 cup molasses
- 1 cup applesauce
- 1 tsp cinnamon
- 1/2 tsp cloves
- 1 tsp baking powder
- 1/2 tsp baking soda
- 1-3/4 cup flour
- 1 tsp ginger

Mix the molasses and applesauce in a large bowl. Add remaining ingredients and mix well. Bake in a nonstick 8 x 8-inch baking pan or one sprayed with a non-stick spray, in a 350° F for 30 to 45 minutes, or until it tests done. **We have added a bit of pure cocoa (2 tablespoons) to make a chocolate flavor.**
Sugar-Free Cream Cheese Frosting

- ½ cup apple juice concentrate
- 1 pound light cream cheese
- 2 tsp vanilla extract
- ½ cup finely chopped raisins
- 1 ½ tsp unflavored gelatin

1. Set aside 2 tablespoons of the juice concentrate.
2. Process the remaining juice concentrate, the cream cheese, vanilla, and raisins in a blender or food processor until smooth. Transfer to a mixing bowl.
3. Stir the gelatin into the 2 tablespoons juice concentrate in a small saucepan; let stand 1 minute to soften. Heat to boiling and stir to dissolve gelatin.
4. Beat the gelatin mixture into the cream cheese mixture until well blended. Refrigerate just until the frosting begins to set, about 30-60 minutes. Frost the cake.

Desi’s Breakfast

Fig and Nut "Cookies/Bars"

- 3/4 cup no sugar peanut butter or hummus if you avoid peanuts
- 1/4 cup butter, melted
- 2 large eggs
- 1/4 cup finely chopped dried figs
- 1/4 cup sweetened dried cranberries
- 1 teaspoon vanilla extract
- 1 cup all-purpose flour (about 4 1/2 ounces)
- 1/2 cup whole wheat flour (about 2 1/3 ounces)
- 1/2 cup unprocessed bran (about 1 ounce)
- 1/2 teaspoon baking soda
- 1/4 teaspoon ground cinnamon
- 1/4 teaspoon ground allspice
- 1/4 cup sliced almonds
- 1 teaspoons unrefined honey

Preheat oven to 350°F.

Combine first 3 ingredients in a large bowl. Stir in chopped figs, cranberries, and vanilla.

Lightly spoon flours into dry measuring cups; level with a knife. Combine flours, bran, baking soda, cinnamon, and allspice, stirring with a whisk. Add flour mixture to egg mixture, stirring just until moist. Gently fold in almonds.

Drop by level 1/4 cup measures 4 inches apart on 2 baking sheets lined with parchment paper. Sprinkle evenly with granulated sugar. Bake at 350°F for 12 minutes or until almost set. Cool 2 minutes on pans. Remove from pans; cool completely on wire racks.

Yield: 10 servings (serving size: 1 "cookie")

CALORIES 211 (31% from fat); FAT 7.1g (sat 3.3g, mono 2.4g, poly 0.8g); PROTEIN 4.5g; CHOLESTEROL 54mg; CALCIUM 37mg; SODIUM 115mg; FIBER 3.4g; IRON 1.8mg; CARBOHYDRATE 33.2g

Dr. Desi’s Berry - Cranberry-Walnut Power Bars

- ACTIVE: 20 MIN
- TOTAL TIME: 1 HR 15 MIN
- SERVINGS: makes 16 bars

These gingery, nutrient-packed bars use only natural sweeteners like brown rice syrup and honey. "Brown rice syrup has a nice, round flavor that doesn't give you the jolt of sweetness that processed sugars do," Swanson says. The recipe itself is very versatile: "Once you get the hang of the technique, you can swap in all kinds of other nuts, spices, ginseng, bee pollen, ginkgo and dried fruit. Use your herb knowledge to make specialty bars."
Ingredients
- 1 1/4 cups walnut halves (5 ounces)
- 1 1/2 cups puffed brown rice cereal
- 1 1/4 cups rolled oats
- 1 cup dried berries or cranberries, chopped
- 1/2 cup oat bran
- 3 tablespoons finely chopped crystallized ginger
- 1 cup brown rice syrup
- 1 tablespoon unrefined honey
- 1/2 teaspoon salt
- 1 teaspoon pure vanilla extract

Directions
1. Preheat the oven to 350°. Lightly spray an 8-by-11-inch baking dish with cooking spray. Spread the walnuts on a baking sheet and toast until fragrant and golden, about 9 minutes. Let cool, then coarsely chop. Transfer the walnuts to a large bowl. Add the puffed rice, rolled oats, cranberries, oat bran and ginger and toss well.

2. In a small saucepan, combine the brown rice syrup, cane sugar and salt and bring to a boil over moderate heat. Cook, stirring occasionally, until the mixture is slightly thickened, about 4 minutes. Remove from the heat and stir in the vanilla. Pour the syrup into the rice-oat mixture and toss to coat thoroughly. Transfer the warm mixture to the prepared baking dish and pack lightly with a spatula greased with cooking spray. Let cool for at least 45 minutes before cutting into 16 bars.

Make Ahead
The cranberry-walnut bars can be wrapped individually in plastic wrap or waxed paper and kept in an airtight container for up to 4 days.

Fruit Juice - How Much Is Too Much?
Avoiding the dangers of fruit juice
By Vincent Iannelli, M.D., Updated January 26, 2008

Is fruit juice dangerous? The American Academy of Pediatrics thought that it was enough of a danger to issue a policy statement about ‘The Use and Misuse of Fruit Juice in Pediatrics’.

In reality, there are a lot of other more important dangers to your child’s health, but drinking too much fruit juice can be a problem. According to the AAP, drinking too much juice can contribute to obesity, the development of cavities (dental caries), diarrhea, and other gastrointestinal problems, such as excessive gas, bloating and abdominal pain.

Among the recommendations of the AAP report are that:
- when you give your child juice, it should be 100% pasteurized fruit juice and not fruit drinks.
- infants under 6 months of age should not be given juice, although many Pediatricians do recommend small amounts of juice for children that are constipated
- younger children aged 1 to 6 years should have only 4 to 6 ounces of juice a day.
- older children should be limited to 8 to 12 ounces of juice a day.

Instead of juice, children should be encouraged to eat whole fruits.
Preventing Problems
How do you prevent problems from drinking too much juice? One easy way is to not introduce juice until your child is six months old. And when you do begin to offer your infant juice, give it in a cup and not a bottle.

Older infants and toddlers generally drink too much juice when they always have a sippie cup in their hands, or if they are sucking on the cup like they would a bottle. Although sippie cups are convenient and it is nice to prevent messes, if you child always has one in his hands, then he is probably most at risk of getting cavities, since his teeth will always have sugar on them.

To prevent your child’s cups from becoming a security object for toddlers, it can help to restrict them to meals, when you offer milk, and snacks.

It may also help to change to a “sport’s bottle” type cup, which can also prevent spills and messes, but aren’t as easy to drink out of as a regular sippie cup.

The Juice ‘Problem’
One of the main problems with drinking too much juice, is that it is filling and will decrease your child’s appetite for other more nutritious foods. While your child will still get a lot of calories, they will mostly be from sugars or carbohydrates, and not from fat or protein, which can contribute to a poorly balanced diet. Also, fruit juices generally don’t have a lot of vitamins and nutrients, although they do have vitamin C and some are fortified with calcium. Also, if your child is drinking a lot of juice, then he probably isn’t drinking much milk, which is a good source of calcium and other vitamins and nutrients.

Does Your Child Have a Problem With Juice?
In general, if you child is eating a well balanced diet, including some fresh fruits and vegetables, is drinking 16 to 24 ounces a day of milk and dairy products, and doesn’t have problems with cavities or being overweight, then he likely doesn’t have a juice problem, even if you are exceeding the AAP limits.

Take our Fruit Juice Poll - How Much Juice Do Your Children Drink?
If your child is exceeding the AAP limits and is a picky eater, has a poorly balanced diet, cavities, diarrhea, chronic abdominal pain or if he is overweight, then you should consider taking steps to limit his intake of juice. You should definitely avoid letting your child fall asleep with a bottle or cup of juice, since that is probably the biggest risk factor for getting cavities. Also avoid giving ‘fruit’ drinks or ‘fruit’ sodas, since they may actually have very little fruit in them.

The Benefits of Juice
After all of this talk about the “juice” controversy, is there any reason to give your child juice at all? Many kids don’t like eating fruit, so offering fruit juice is one way to get your child the 2 (for younger kids) to 4 servings (older kids) of fruit that is recommended in the Food Pyramid Guide. A 6-ounce glass of 100% fruit juice can substitute for (but is not really equal to) one serving of fruit.

The AAP advises that half of your child’s fruit servings from the Food Pyramid Guide can come from 100% fruit juice.

Still, it is important to remember that the recommended servings of fruit juice are actually limits. Your child does not need to drink any fruit juice, especially if he is getting the Food Guide Pyramid’s recommended servings of fruit by eating whole fruit.

Fruit juice can be helpful for children who are constipated and fruit juice diluted with fluoridated water is a good way to get your child fluoride if he doesn’t like to drink plain water.

Kids love the taste of pure fruit juice, and parents love it because it’s a healthy source of nutrients.

When choosing healthy pure juice for your children, it’s important to note what kind of juice you are serving and how much you are offering. Here’s what families should know about fruit juice versus other fruit-flavored beverages:

Choose the right fruit juice
All juices are not created equal – some are nutritional gems while others are sugar water. Consider these tips as you make juice part of your child’s diet.

Be label savvy. Buy juice labeled “100 percent fruit juice.”

- Beware of words like “drink,” “punch,” “cocktail,” “beverage” and “ade.” These are not 100 percent juice – they’re junk fruit beverages.
- Many “junk fruit beverages” are nutrient-void beverages, commonly masked as fruit “juice,” “drinks” or “cocktails.” Most contain 10 percent or less of pure fruit juice, and lots of water, sugar and additives. Junk fruit beverages have little or no nutritional value.
- Avoid junk fruit beverages that are disguised as fruit “blends” that contain small amounts of various fruits like grape, apple and pear. Ounce for ounce, these juices don’t have the natural levels of vital nutrients that 100 percent pure juices like orange juice provide. Plus, they usually contain added sugars.

Examine the ingredients. Avoid fruit-flavored beverages that have added fructose corn syrup. They shape a child’s taste toward sweet cravings.

Look at the juice. Generally, the cloudier the juice, the more nutritious it is. If you can see through it, you’re buying mostly water. Picture a tall glass of 100 percent pure orange juice with pulp. There should be some sediment at the bottom, which is a reminder of the juice’s origins.

Go with citrus juices. Orange juice is a morning favorite and one of the most nutritious beverages available. An excellent source of vitamin C and potassium, orange juice also is a good source of folate and thiamin. Compared to other juices, orange juice is higher in protein, vitamin A, B-vitamins, vitamin C (it contains more than 10 times as much vitamin C as apple juice), calcium, iron and potassium, making it a heavy weight among fruit juices. Drinking an 8-ounce glass counts as one of your five necessary fruit and vegetable servings for the day.

Check if it’s pasteurized. Commercial juices now are required to say if it’s pasteurized on the label. The new law is a result of non-pasteurized juice-borne bacterial illnesses that are especially harmful to people with weakened immune systems (such as children, pregnant women or the elderly). No need to worry, though. A new high-pressure pasteurization method increases the shelf life and significantly reduces the bacteria count. And, it reportedly does not affect the flavor or vitamin and mineral content of the juice. The key is to make sure the label on your juice says it’s pasteurized.

Consider Juice Variety. Another beneficial juice in addition to orange juice is nectar juice. Nectar usually has more calories, but more nutrients are preserved during processing nectar than other juices. Apricot nectar is especially healthy, containing a lot of beta-carotene, almost a gram of protein per 8-ounce glass, and it’s higher than most juices in vitamin A, vitamin B-6 and iron.
Other nutritious nectars come from the “P” fruits – peaches, pears and prunes.

**How much you offer counts**

Juice can be a tasty alternative to water, but consuming too much juice may take the place of other nutritious foods the child would normally eat. The following chart explains how much juice is appropriate for a child up to 12 years of age:

<table>
<thead>
<tr>
<th>Age</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>6 – 12 months</td>
<td>4 ounces per day</td>
</tr>
<tr>
<td>1 – 4 years</td>
<td>6 ounces per day</td>
</tr>
<tr>
<td>4 – 12 years</td>
<td>8 ounces per day</td>
</tr>
</tbody>
</table>

**Juice consumption 101**

- Offer 100-percent juice at mealtimes or as snacks as an alternative to soda or junk juices. Serve orange juice at breakfast, and pack a carton in your child's lunch box for lunch or as a daytime snack.
- If a child usually consumes more than the daily-recommended amount of juice, dilute the juice with water. The water has the sweet taste of juice while allowing the appropriate amount of juice intake throughout the day.
- If a child asks for carbonated soda, add seltzer to a glass of 100 percent pure orange juice to add 'a bubbly sensation'.
- Don’t let toddlers walk around or fall asleep with a baby bottle filled with juice. It can cause tooth decay. The juice bathes the teeth, which may contribute to bacterial growth, plaque and eventual decay (a condition called the "juice bottle syndrome").

**Vitamin C tips**

- Orange and grapefruit juices contain more natural vitamin C than any other fruit juice. They’re great juices for your children — and for you.
- The vitamin C content of canned juices may deteriorate upon exposure to air, so be sure to refrigerate and tightly seal opened containers.
- Freshly squeezed juice contains more vitamin C than “made from concentrate” canned or frozen juices.
- Adding ascorbic acid, or vitamin C, to juice allows manufacturers to claim that the drink will give your child “100 percent vitamin C.” This health claim, however, can mask its sugary content and hides the fact that other essential nutrients are not included.

**Avoiding tummy-aches**

Juices with a high fructose-to-glucose ratio and that contain sorbitol can aggravate the intestines, especially those already sensitive by irritation or infection.

- **Recommended Juices:** Citrus juices and some other juices (strawberry, raspberry, blackberry and white grape juice) do not contain sorbitol and are recommended by the American Academy of Pediatrics' Committee on Nutrition for use during intestinal illnesses.

- **Fructose-to-Glucose Ratio:** A high fructose-to-glucose ratio may cause diarrhea or abdominal pain because the excess fructose ferments in the large intestine. Orange juice is a recommended juice because it contains equal amounts of glucose and fructose and no sorbitol.
- **Infants and Children:** Because their immature intestines allow more unabsorbed sugar to reach the colon where it ferments, infants and children are particularly prone to gas and diarrhea from excessive juice.

**Favorite 100% pure fruit juice facts**

- **Orange** — The juice with the highest amount of vitamin C and potassium and a good source of folate and thiamin. It also contains cancer-fighting phytochemicals.
- **Grapefruit** — The juice with the second highest amount of vitamin C.
- **Apricot Nectar** — This juice is high in vitamin A and contains a small amount of iron and zinc.
- **Prune** — The juice highest in iron, zinc, fiber and niacin.
- **White Grape** — A juice high in vitamin C, and the best juice for healing the intestines.
- **Apple** — This juice has no nutritional advantage over other juices, but is good for flavoring water because it dilutes well.

**Articles on Fructose**

Fructose, or fruit sugar, is a simple monosaccharide found in many foods. It is one of the three important dietary monosaccharides along with glucose and galactose. The organic fructose molecule was first discovered by Augustin-Pierre Dubrunfaut in 1847. Fructose is a white solid that dissolves in water – it is the most water-soluble of all the sugars. Honey, tree fruits, berries, melons, and some root vegetables contain significant amounts of molecular fructose, usually in combination with glucose, stored in the form of sucrose. About 240,000 tonnes of crystalline fructose are produced annually.

Fructose is a 50% component of sucrose. Sucrose is a disaccharide derived from the condensation of glucose and fructose. Fructose is derived from the digestion of table sugar (sucrose).

**High-fructose corn syrup is a SINthetic product. Thus an Insult to the Body.**

Crystalline fructose and high-fructose corn syrup are often confused as the same product. Crystalline fructose, which is often produced from a fructose-enriched corn syrup, is indeed the monosaccharide. High-fructose corn syrup, however, refers to a family of mixtures of varying amounts of fructose and glucose.

Fructose is also found in the synthetically manufactured sweetener, high-fructose corn syrup (HFCS). Hydrolyzed corn starch is used as the raw material for production of HFCS. Through the enzymatic treatment, glucose molecules are converted into fructose. There are three types of HFCS, each with a different proportion of fructose: HFCS-42, HFCS-55, and HFCS-90. The number.
for each HFCS corresponds to the percentage of synthesized fructose present in the syrup. HFCS-90 has the highest concentration of fructose, and is typically used to manufacture HFCS-55; HFCS 55 is used as sweetener in soft drinks, while HFCS-42 is used in many processed foods and baked goods.

Fructose: Sweet, But Dangerous

Is High Fructose Corn Syrup Worse Than Sugar?

By Laura Dolson, About.com Guide

Sodas are Usually Sweetened with High Fructose Corn Syrup

What is fructose?

Fructose is a monosaccharide (simple sugar), which the body can use for energy. Because it does not cause blood sugar rise tremendously (has a low glycemic index), it was once thought that fructose was a good substitute for sucrose (table sugar). However, the American Diabetes Association and nutritional experts have changed their minds about this.

Is fructose bad for me?

A small amount of fructose, such as the amount found in most vegetables and fruits, is not a bad thing. In fact, there is evidence that a little bit may help your body process glucose properly.

However, consuming too much fructose at once seems to overwhelm the body’s capacity to process it. The diets of our ancestors contained only very small amounts of fructose. These days, estimates are that about 10% of the modern diet comes from fructose.

What happens if I consume too much fructose?

Most of the carbohydrates we eat are made up of chains of glucose. When glucose enters the bloodstream, the body releases insulin to help regulate it. Fructose, on the other hand, is processed in the liver. To greatly simplify the situation: When too much fructose enters the liver, the liver can’t process it all fast enough for the body to use as sugar. Instead, it starts making fats from the fructose and sending them off into the bloodstream as triglycerides.

Why is this bad?

This is potentially bad for at least three reasons:

- High blood triglycerides are a risk factor for heart disease.
- Corn Fructose ends up circumventing the normal appetite signaling system, so appetite-regulating hormones aren’t triggered—and you’re left feeling unsatisfied. This is probably at least part of the reason why excess fructose consumption is associated with weight gain.
- There is growing evidence that excess fructose consumption may facilitate insulin resistance, and eventually type 2 diabetes. However, Most of this effect may be from chemicals in soda which reacts with the high fructose corn syrup.

What are the major sources of fructose?

Fruits and vegetables have relatively small, “normal” amounts of fructose that most bodies can handle quite well. The problem comes with added sugars in the modern diet, the volume of which has grown rapidly in recent decades. The blame has often been pinned to high fructose corn syrup (HFCS), which is made up of 55% fructose and 45% glucose. However, sucrose is half fructose and half glucose. So, HFCS actually doesn’t have a whole lot more fructose than “regular” sugar, gram for gram.

High fructose corn syrup has become incredibly inexpensive and abundant, partially due to corn subsidies in the United States. So, really, the problem is more that it has become so cheap that it has crept its way into a great number of the foods we eat every day.

Chemical properties

Fructose is a 6-carbon polyhydroxyketone. It is an isomer of glucose, i.e. both have the same molecular formula (C6H12O6), but they differ structurally. Crystalline fructose adopts a cyclic six-membered structure owing to the stability of its hemiketal and internal hydrogen-bonding. This form is formally called D-fructopyranose. In solution, fructose exists as an equilibrium mixture of 70% fructopyranose and about 22% fructofuranose, as well as small amounts of the three other forms, including the acyclic structure.
Fructose and Maillard reaction
Fructose undergoes the Maillard reaction, non-enzymatic browning, with amino acids. Because fructose exists to a greater extent in the open-chain form than does glucose, the initial stages of the Maillard reaction occurs more rapidly than with glucose. Therefore, fructose potentially may contribute to changes in food palatability, as well as other nutritional effects, such as excessive browning, volume and tenderness reduction during cake preparation, and formation of mutagenic compounds. This has been the problem with mass sale of fructose from fruit because it Brows and people want their sugar white. Also the live nature of fructose means that it can change flavor. One day it wants to taste like an apple, another day it wants to taste like a cherry. Small minds do not like this. Bigger minds have no problem with variability but small minds like conformity.

Dehydration
Corn Fructose readily dehydrates to give hydroxymethylfurfural ("HMF"). This process may in future be part of a low-cost, carbon neutral system to produce replacements for petrol and diesel from plantations.

Physical and functional properties

Relative sweetness
The primary reason that corn fructose is used commercially in foods and beverages, besides its low cost, is its high relative sweetness. It is the sweetest of all naturally occurring carbohydrates. Fructose is generally regarded as being 1.73 times as sweet as sucrose.

However, it is the 5-ring form of fructose that is sweeter; the 6-ring form tastes about the same as usual table sugar. Warming or cooking fructose leads to formation of the 6-ring form.
The sweetness of fructose is perceived earlier than that of sucrose or dextrose, and the taste sensation reaches a peak (higher than sucrose) and diminishes more quickly than sucrose. Fructose can also enhance other flavors in the system. One of the problems of Processed fructose is that people use the same amount as sucrose sugar and it is too much.

**Sweetness synergy**

Fructose exhibits a sweetness synergy effect when used in combination with other sweeteners. The relative sweetness of fructose blended with sucrose, aspartame, or saccharin is perceived to be greater than the sweetness calculated from individual components.

**Fructose solubility and crystallization**

Fructose has a higher solubility than other sugars as well as other sugar alcohols. Fructose is therefore difficult to crystallize from an aqueous solution. Sugar mixes containing fructose, such as candies, are softer than those containing other sugars because of the greater solubility of fructose.

**Fructose hygroscopicity and humectancy**

Fructose is quicker to absorb moisture and slower to release it to the environment than sucrose, dextrose, or other nutritive sweeteners. Fructose is an excellent humectant and retains moisture for a long period of time even at low relative humidity (RH). Therefore, fructose can contribute to improved quality, better texture, and longer shelf life to the food products in which it is used.

**Freezing point**

Fructose has a greater effect on freezing point depression than disaccharides or oligosaccharides, which may protect the integrity of cell walls of fruit by reducing ice crystal formation. However, this characteristic may be undesirable in soft-serve or hard-frozen dairy desserts.

**Fructose and starch functionality in food systems**

Fructose increases starch viscosity more rapidly and achieves a higher final viscosity than sucrose because fructose lowers the temperature required during gelatinizing of starch, causing a greater final viscosity.

**Food sources**

Natural sources of fructose include fruits, vegetables (including sugar cane), and honey. Fructose is often further concentrated from these sources. The highest dietary sources of fructose, besides pure crystalline fructose, are foods containing table sugar (sucrose), high-fructose corn syrup, agave nectar, honey, molasses, maple syrup, and fruit juices, as these have the highest percentages of fructose (including fructose in sucrose) per serving compared to other common foods and ingredients. Fructose exists in foods either as a free monosaccharide, or bound to glucose as sucrose, a disaccharide. Fructose, glucose, and sucrose may all be present in a food; however, different foods will have varying levels of each of these three sugars. The sugar contents of common fruits and vegetables are presented in Table 1. In general, in foods that contain free fructose, the ratio of fructose to glucose is approximately 1:1; that is, foods with fructose usually contain about an equal amount of free glucose. A value that is above 1 indicates a higher proportion of fructose to glucose, and below 1, a lower proportion. Some fruits have larger proportions of fructose to glucose compared to others. For example, apples and pears contain more than twice as much free fructose as glucose, while for apricots the proportion is less than half as much fructose as glucose.

**Apple and pear juices are of particular interest to pediatricians because the high concentrations of free fructose in these juices can cause diarrhea in children. The cells (enterocytes) that line children’s small intestines have less affinity for fructose absorption than for glucose and sucrose. Unabsorbed fructose creates higher osmolarity in the small intestine, which draws water into the gastrointestinal tract, resulting in osmotic diarrhea. This phenomenon is discussed in greater detail in the Health Effects section.**

Table 1 also shows the amount of sucrose found in common fruits and vegetables. Sugar cane and sugar beet have a high concentration of sucrose, and are used for commercial preparation of pure sucrose. Extracted cane or beet juice is clarified, removing impurities; and concentrated by removing excess water. The end product is 99.9% pure sucrose. Sucrose-containing sugars include common table white granulated sugar and powdered sugar, as well as brown sugar.

Table 1. Sugar content of selected common plant foods (g/100g)

<table>
<thead>
<tr>
<th>Food Item</th>
<th>Total Carbohydrate</th>
<th>Total Sugars</th>
<th>Free Fructose</th>
<th>Free Glucose</th>
<th>Sucrose</th>
<th>Fructose/ Glucose Ratio</th>
<th>Sucrose as a % of Total Sugars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fruits</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apple</td>
<td>13.8</td>
<td>10.4</td>
<td>5.9</td>
<td>2.4</td>
<td>2.1</td>
<td>2.0</td>
<td>19.9</td>
</tr>
<tr>
<td>Apricot</td>
<td>11.1</td>
<td>9.2</td>
<td>0.9</td>
<td>2.4</td>
<td>5.9</td>
<td>0.7</td>
<td>63.5</td>
</tr>
<tr>
<td>Banana</td>
<td>22.8</td>
<td>12.2</td>
<td>4.9</td>
<td>5.0</td>
<td>2.4</td>
<td>1.0</td>
<td>20.0</td>
</tr>
<tr>
<td>Grapes</td>
<td>18.1</td>
<td>15.5</td>
<td>8.1</td>
<td>7.2</td>
<td>0.2</td>
<td>1.1</td>
<td>1.0</td>
</tr>
<tr>
<td>Peach</td>
<td>9.5</td>
<td>8.4</td>
<td>1.5</td>
<td>2.0</td>
<td>4.8</td>
<td>0.9</td>
<td>56.7</td>
</tr>
<tr>
<td>Pineapple</td>
<td>13.1</td>
<td>9.9</td>
<td>2.1</td>
<td>1.7</td>
<td>6.0</td>
<td>1.1</td>
<td>60.8</td>
</tr>
<tr>
<td>Pear</td>
<td>15.5</td>
<td>9.8</td>
<td>6.2</td>
<td>2.8</td>
<td>0.8</td>
<td>2.1</td>
<td>8.0</td>
</tr>
<tr>
<td>Vegetables</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beet, Red</td>
<td>9.6</td>
<td>6.8</td>
<td>0.1</td>
<td>0.1</td>
<td>6.5</td>
<td>1.0</td>
<td>96.2</td>
</tr>
<tr>
<td>Carrot</td>
<td>9.6</td>
<td>4.7</td>
<td>0.6</td>
<td>0.6</td>
<td>3.6</td>
<td>1.0</td>
<td>70.0</td>
</tr>
<tr>
<td>Corn, Sweet</td>
<td>19.0</td>
<td>3.2</td>
<td>0.5</td>
<td>0.5</td>
<td>2.1</td>
<td>1.0</td>
<td>64.0</td>
</tr>
<tr>
<td>Red Pepper, Sweet</td>
<td>6.0</td>
<td>4.2</td>
<td>2.3</td>
<td>1.9</td>
<td>0.0</td>
<td>1.2</td>
<td>0.0</td>
</tr>
<tr>
<td>Onion, Sweet</td>
<td>7.6</td>
<td>5.0</td>
<td>2.0</td>
<td>2.3</td>
<td>0.7</td>
<td>0.9</td>
<td>14.3</td>
</tr>
<tr>
<td>Sweet Potato</td>
<td>20.1</td>
<td>4.2</td>
<td>0.7</td>
<td>1.0</td>
<td>2.5</td>
<td>0.9</td>
<td>60.3</td>
</tr>
<tr>
<td>Yam</td>
<td>27.9</td>
<td>0.5</td>
<td>tr</td>
<td>tr</td>
<td>tr</td>
<td>na</td>
<td>tr</td>
</tr>
<tr>
<td>Sugar Cane</td>
<td>13 - 18</td>
<td>0.2 – 1.0</td>
<td>0.2 – 1.0</td>
<td>11 - 16</td>
<td>1.0</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Sugar Beet</td>
<td>17 - 18</td>
<td>0.1 – 0.5</td>
<td>0.1 – 0.5</td>
<td>16 - 17</td>
<td>1.0</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>
An apple a day keeps the doctor away

There are several reasons to believe the old English saying. I have gathered a few of those here:

- Apples have a low glycemic index rating, which means that they release energy slowly and don’t produce high rises of blood sugar in the body.
- Apples contain a lot of pectin, which helps to remove toxins, and tartaric acid, which aids digestion. The pectin expands in your stomach, absorbing the moisture and stimulating the intestine. As a result, intestinal conditions get better, and it is easier to absorb other nutrients.
- The fiber content in apples help regulate bowel movements and may thus reduce the risk of colon cancer.
- Apples contain Vitamin C which boosts the immune system.
- Apples are rich in flavonoid, which are known for its antioxidant effects which in turn prevent Heart Disease.
- Apples help to reduce bad cholesterol. They prevent LDL cholesterol from turning into oxidized LDL, a very dangerous form of bad cholesterol which can be deadly.

Commercial sweeteners (carbohydrate content)

<table>
<thead>
<tr>
<th>Sugar</th>
<th>Fructose</th>
<th>Glucose</th>
<th>Sucrose (Fructose-Glucose)</th>
<th>Other Sugars</th>
</tr>
</thead>
<tbody>
<tr>
<td>Granulated Sugar</td>
<td>(50)</td>
<td>(50)</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>Brown Sugar</td>
<td>1</td>
<td>1</td>
<td>97</td>
<td>1</td>
</tr>
<tr>
<td>HFCS-42</td>
<td>42</td>
<td>53</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>HFCS-55</td>
<td>55</td>
<td>41</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>HFCS-90</td>
<td>90</td>
<td>5</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>Honey</td>
<td>50</td>
<td>44</td>
<td>1</td>
<td>5</td>
</tr>
<tr>
<td>Maple Syrup</td>
<td>1</td>
<td>4</td>
<td>95</td>
<td>0</td>
</tr>
<tr>
<td>Molasses</td>
<td>23</td>
<td>21</td>
<td>53</td>
<td>3</td>
</tr>
<tr>
<td>Corn Syrup</td>
<td>0</td>
<td>35</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>


Cane and beet sugars have been used as the major sweetener in food manufacturing for centuries. However, with the development of HFCS, a significant shift occurred in the type of sweetener consumption. As seen in Figure 3, this change happened in the 1970s. Contrary to the popular belief, however, with the increase of HFCS consumption, the total fructose intake has not dramatically changed. Granulated sugar is 99.9% pure sucrose, which means that it has equal ratio of fructose to glucose. The most commonly used HFCS, 42 and 55, have about equal ratio...
of fructose to glucose, with minor differences. HFCS has simply replaced sucrose as a sweetener. Therefore, despite the changes in the sweetener consumption, the ratio of glucose to fructose intake has remained relatively constant.

Figure 3: Adjusted consumption of refined sugar per capita in the U.S.

**Fructose digestion and absorption in humans**

Fructose exists in foods as either a monosaccharide (free fructose) or as a unit of a disaccharide (sucrose). Free fructose is absorbed directly by the intestine; however, when fructose is consumed in the form of sucrose, digestion occurs entirely in the upper small intestine. As sucrose comes into contact with the membrane of the small intestine, the enzyme sucrase catalyzes the cleavage of sucrose to yield one glucose unit and one fructose unit. Fructose is absorbed in the small intestine, then enters the portal vein and is directed toward the liver.

Figure 4: Hydrolysis of sucrose to glucose and fructose by sucrase.

The mechanism of fructose absorption in the small intestine is not completely understood. Some evidence suggests active transport, because fructose uptake has been shown to occur against a concentration gradient. However, the majority of research supports the claim that fructose absorption occurs on the mucosal membrane via facilitated transport involving GLUT5 transport proteins. An electrical factor stimulated by the brush border effect of fiber in the diet. Since the concentration of fructose is higher in the lumen, fructose is able to flow down a concentration gradient into the enterocytes, assisted by transport proteins. Fructose may be transported out of the enterocyte across the basolateral membrane by either GLUT2 or GLUT5, although the GLUT2 transporter has a greater capacity for transporting fructose and therefore the majority of fructose is transported out of the enterocyte through GLUT2.

Figure 5: Intestinal sugar transport proteins.
Capacity and rate of absorption

The absorption capacity for fructose in monosaccharide form ranges from less than 5 g to 50 g and adapts with changes in dietary fructose intake. Studies show the greatest absorption rate occurs when glucose and fructose are administered in equal quantities. When fructose is ingested as part of the disaccharide sucrose, absorption capacity is much higher because fructose exists in a 1:1 ratio with glucose. It appears that the GLUT5 transfer rate may be saturated at low levels, and absorption is increased through joint absorption with glucose. One proposed mechanism for this phenomenon is a glucose-dependent cotransport of fructose. In addition, fructose transfer activity increases with dietary fructose intake. The presence of fructose in the lumen causes increased mRNA transcription of GLUT5, leading to increased transport proteins. High-fructose diets have been shown to increase abundance of transport proteins within 3 days of intake.

Malabsorption

Several studies have measured the intestinal absorption of fructose using hydrogen breath test. These studies indicate that fructose is not completely absorbed in the small intestine. When fructose is not absorbed in the small intestine, it is transported into the large intestine, where it is fermented by the colonic flora. Hydrogen is produced during the fermentation process and dissolves into the blood of the portal vein. This hydrogen is transported to the lungs, where it is exchanged across the lungs and is measurable by the hydrogen breath test. The colonic flora also produces carbon dioxide, short-chain fatty acids, organic acids, and trace gases in the presence of unabsorbed fructose. The presence of gases and organic acids in the large intestine causes gastrointestinal symptoms such as bloating, diarrhea, flatulence, and gastrointestinal pain.

Exercise can exacerbate these symptoms by decreasing transit time in the small intestine, resulting in a greater amount of fructose being emptied into the large intestine.

Fructose metabolism

All three dietary monosaccharides are transported into the liver by the GLUT 2 transporter. Fructose and galactose are phosphorylated in the liver by fructokinase (Km = 0.5 mM) and galactokinase (Km = 0.8 mM). By contrast, glucose tends to pass through the liver (Km of hepatic glucokinase = 10 mM) and can be metabolised anywhere in the body. Uptake of fructose by the liver is not regulated by insulin.

Fructolysis

Fructolysis initially produces fructose 1,6-bisphosphate, which is split to produce phosphate derivatives of the trioses dihydroxyacetone and glyceraldehyde. These are then metabolized either in the gluconeogenic pathway for glycogen replenishment and/or complete metabolism in the fructolytic pathway to pyruvate, which after conversion to acetyl-CoA enters the Krebs cycle, and is converted to citrate and subsequently directed toward “de novo” synthesis of the free fatty acid palmitate.

Metabolism of fructose to DHAP and glyceraldehyde

The first step in the metabolism of fructose is the phosphorylation of fructose to fructose 1-phosphate by fructokinase, thus trapping fructose for metabolism in the liver. Fructose 1-phosphate then undergoes hydrolysis by aldolase B to form DHAP and glyceraldehyde; DHAP can either be isomerized to glyceraldehyde 3-phosphate by triosephosphate isomerase or undergo reduction to glycerol 3-phosphate by glycerol 3-phosphate dehydrogenase. The glyceraldehyde produced may also be converted to glyceraldehyde 3-phosphate by glyceraldehyde kinase or converted to glycerol 3-phosphate by glyceroldehyde 3-phosphate dehydrogenase. The metabolism of fructose at this point yields intermediates in the gluconeogenic and fructolytic pathways leading to glycogen synthesis as well as fatty acid and triglyceride synthesis.

Synthesis of glycogen from DHAP and glyceraldehyde 3 phosphate

The resultant glyceraldehyde formed by aldolase B then undergoes phosphorylation to glyceraldehyde 3-phosphate. Increased concentrations of DHAP and glyceraldehyde 3-phosphate in the liver drive the gluconeogenic pathway toward glucose and subsequent glycogen synthesis. It appears that fructose is a better substrate for glycogen synthesis than glucose and that glycogen replenishment takes precedence over triglyceride formation. Once liver glycogen is replenished, the intermediates of fructose metabolism are primarily directed toward triglyceride synthesis.

Synthesis of triglyceride from DHAP and glyceraldehyde 3 phosphate

Carbons from dietary fructose are found in both the free fatty acid and glycerol moieties of plasma triglycerides. Processed High Fructose mineral free consumption can lead to excess pyruvate production, causing a buildup of Krebs cycle intermediates. Accumulated citrate can
be transported from the mitochondria into the cytosol of hepatocytes, converted to acetyl CoA by citrate lyase and directed toward fatty acid synthesis. Additionally, DHAP can be converted to glycerol 3-phosphate as previously mentioned, providing the glycerol backbone for the triglyceride molecule. Triglycerides are incorporated into very low density lipoproteins (VLDL), which are released from the liver destined toward peripheral tissues for storage in both fat and muscle cells.

**Figure 7: Metabolic conversion of fructose to triglyceride in the liver.**

**Health effects**

**Digestive problems**

Fructose absorption occurs via the GLUT-5 (fructose only) transporter, and the GLUT2 transporter, for which it competes with glucose and galactose. A deficiency of GLUT 5 may result in excess fructose carried into the lower intestine. There, it can provide nutrients for the existing gut flora, which produce gas. It may also cause water retention in the intestine. These effects may lead to bloating, excessive flatulence, loose stools, and even diarrhea depending on the amounts eaten and other factors. For many people, fructose malabsorption is a major health concern.

**Liver disease**

"The medical profession thinks fructose is better for diabetics than sugar," says Meira Field, Ph.D., a research chemist at United States Department of Agriculture, "but every cell in the body can metabolize glucose. However, all fructose must be metabolized in the liver. The livers of the rats on the high fructose diet looked like the livers of alcoholics, plugged with fat and cirrhotic.” While a few other tissues (e.g., sperm cells and some intestinal cells) do use fructose directly, fructose is

**Metabolic syndromes**

Excess processed fructose consumption has been hypothesized to be a cause of insulin resistance, obesity, elevated LDL cholesterol and triglycerides, leading to metabolic syndrome. Fructose consumption has been shown to be correlated with obesity, especially central obesity which is thought to be the most dangerous kind of obesity. A study in mice showed that a high fructose intake increases adiposity.

Although all simple sugars have nearly identical chemical formulae, each has distinct chemical properties. This can be illustrated with pure fructose. A journal article reports that, “…fructose given alone increased the blood glucose almost as much as a similar amount of glucose (78% of the glucose-alone area).”

One study concluded that processed high fructose corn syrup "produced significantly higher fasting plasma triglyceride values than did the glucose diet in men" and "...if plasma triglycerides are a risk factor for cardiovascular disease, then diets high in processed fructose may be undesirable”. Bantle et al. "noted the same effects in a study of 14 healthy volunteers who sequentially ate a high-fructose diet and one almost devoid of the sugar.”

Fructose is a reducing sugar, as are all monosaccharides. The spontaneous chemical reaction of simple sugar molecules to proteins, known as glycation, is thought to be a significant cause of damage in diabetics. Fructose appears to be equivalent to glucose in this regard and so does not seem to be a better answer for diabetics for this reason alone, save for the smaller quantities required to achieve equivalent sweetness in some foods. This may be an important contribution to senescence and many age-related chronic diseases.

**Compared to sucrose**

Studies that have compared high-fructose corn syrup (an ingredient in nearly all soft drinks sold in the US) to sucrose (common table sugar) find that most measured physiological effects are equivalent. For instance, Melanson et al. (2006), studied the effects of HFCS and sucrose sweetened drinks on blood glucose, insulin, leptin, and ghrelin levels. They found no significant differences in any of these parameters. This is not surprising, since sucrose is a disaccharide that digests to 50% fructose and 50% glucose, whereas the high-fructose corn syrup most commonly used on soft drinks is 55% fructose and 45% glucose. The difference between the two lies in the fact that HFCS contains little sucrose, the fructose and glucose being independent moieties.

Fructose is often recommended for diabetics because it does not trigger the production of insulin by pancreatic ß cells, probably because ß cells have low levels of GLUT5. Fructose has a very low glycemic index of 19 ± 2, compared with 100 for glucose and 68 ± 5 for sucrose. Fructose is also seventy-three percent sweeter than sucrose (see 2.1 Relative Sweetness) at room temperature, so diabetics can use less of it. Studies show that fructose consumed before a meal may even lessen the glycemic response of the meal. Its sweetness changes at higher temperatures, so its effects in recipes are not equivalent to those of sucrose (i.e., table sugar).
almost entirely metabolized in the liver. "When fructose reaches the liver," says Dr. William J. Whelan, a biochemist at the University of Miami School of Medicine, "the liver goes bananas and stops everything else to metabolize the fructose." Eating fructose instead of glucose results in lower circulating insulin and leptin levels, and higher of ghrelin levels after the meal. Since leptin and insulin decrease appetite and ghrelin increases appetite, some researchers suspect that eating large amounts of fructose increases the likelihood of weight gain.

Excessive processed fructose consumption is also believed to contribute to the development of non-alcoholic fatty liver disease.

**Gout**

It has been suggested in a recent British Medical Journal study that high consumption of processed fructose is linked to gout. Cases of gout have risen in recent years, despite commonly being thought of as a Victorian disease, and it is suspected that the fructose found in soft drinks (e.g., carbonated beverages) and other sweetened drinks is the reason for this.

In order for the liver to process fructose, it must be phosphorylated by removal of phosphates from adenosine triphosphate (ATP). The ATP gets converted to adenosine monophosphate (AMP), then to inositol monophosphate (IMP), and finally to uric acid, the agent in gout.

**Glycaemic index**

Fructose has the lowest Glycaemic Index (G.I. = 19) of all the natural sugars and may be used in moderation by Diabetics. It is recommended that a maximum intake of 25g - 40g per day is adopted, provided that this is counted towards the daily calory count. In comparison, ordinary table sugar (Sucrose) has a G.I of 65 and Honey has a G.I of 55. Fruit Sugar has the advantage of being adopted, provided that this is counted towards the daily calory count. In comparison, ordinary table sugar (Sucrose) has a G.I of 65 and Honey has a G.I of 55. Fruit Sugar has the advantage of being inositol monophosphate (IMP), and finally to uric acid, the agent in gout.

Fructose in our diet: http://www.medbio.info/Horn/Time%201-2/carbohydrate_metabolism.htm last visited 2008-12-28


The sugar in your soda and other favorite sugary treats may all go down sweetly, but a groundbreaking new study found they act very differently once in your body.

It may all taste equally sweet, but the type of sugar you eat matters big-time for your health.

The main causes of sugar in question are:

1. Glucose: made when your body breaks down starches
2. Fructose: the sugar found naturally in fruits and widely used in the form of high-fructose corn syrup
3. Sucrose: table sugar

Researchers from the University of California, Davis compared refined glucose and refined fructose consumption among 32 overweight or obese people and found they resulted in very different health changes.

After drinking either a refined fructose- or glucose-sweetened beverage that made up 25 percent of their daily calories for 12 weeks, both groups gained a similar amount of weight. However, those drinking the fructose-sweetened beverage experienced an array of other unhealthy effects, including:

- An increase in visceral fat, the kind that embeds itself between tissues in organs
- Less sensitivity to insulin, one of the first signs of diabetes
- Increased fat production in the liver
- Elevated LDL (bad) cholesterol
- Increased levels of triglycerides

People who drank the refined glucose-sweetened beverage, meanwhile, experienced no such changes.

"This suggests that in the same way that not all fats are the same, not all dietary carbohydrates are the same either," Peter Havel, professor of nutrition at the University of California Davis and lead author of the study told TIME magazine.

When glucose is consumed, a set of reactions occur in the body allowing it to be used as energy, and production of leptin, a hormone that helps control appetite and fat storage, is increased. Meanwhile, ghrelin, a stomach hormone, is reduced, which is thought to help hunger go away.

When refined fructose is consumed, however, it "appears to behave more like fat with respect to the hormones involved in body weight regulation," explains Peter Havel, associate professor of nutrition at the University of California, Davis. "Refined Fructose doesn't stimulate insulin secretion. It doesn't increase leptin production or suppress production of ghrelin. That suggests that consuming a lot of fructose, like consuming too much fat, could contribute to weight gain."

And as this most recent study pointed out, it may cause other dangerous side effects as well.

Most Sweets Contain Refined Fructose or Refined Sucrose

This news may compel you to begin searching for glucose-sweetened versions of your favorite desserts and sodas, but most sugary products are made with either refined sucrose or fructose, often in the form of high-fructose corn syrup.

Sucrose is made of 50% fructose and 50% glucose, whereas high-fructose corn syrup can be either 55% fructose, 45% glucose, or 42% fructose, 58% glucose.

What this means is that you'll be hard pressed to find products sweetened with glucose, and may risk the side effects discovered in this study no matter which type you choose.

"This study provides the best argument yet that we should either decide to consume less refined sugar-sweetened beverages in general, or that we should conduct more research into the possibility of using other sweeteners that may be more glucose-based," Matthias Tschop, an obesity researcher at the Obesity Research Center in the University of Cincinnati, said in TIME.

The Refined Fructose-Diabetes Connection

According to Dr. Walter Willett, chair of the department of nutrition at the Harvard School of Public Health, long-term consumption of sugared drinks, which are typically sweetened with high-fructose corn syrup, may double your risk of obesity. Part of the risk is simply from the extra
calories, but part is also due to the high fructose content in the drinks.

And a review of multiple studies by Havel and colleagues, published in the American Journal of Clinical Nutrition, found that, in animals, consuming large amounts of HFCS led to several early warning signs of diabetes, including:

Glucose Balance Busts Your Sugar Cravings

Gymnema sylvestre, dubbed the “sugar destroyer,” is known to help weight loss by significantly decreasing sugar cravings, through improving the cells’ natural intake and utilization of blood sugar.

Glucose Balance contains the highest quality of Gymnema sylvestre (GS) leaves, which also contain antibacterial, anti-allergic and antiviral properties that have been reported to support:

- Hypoglycemia
- Cholesterol
- Anemia
- Digestion
- Cough
- Constipation
- Water retention
- Liver disease

Other reports also indicate Gymnema sylvestre has a role in supporting healthy cholesterol levels, including LDL (bad cholesterol) and triglycerides.

Ideally to help protect your health you should minimize your intake of sugars, especially HFCS, fructose and sucrose, by limiting your consumption of soda and other sugary foods and drinks.

Need Help Kicking Your Sugar Cravings?

Gymnema Sylvestre, a plant native to the lush tropical regions of India, has bitter leaves, dubbed “sugar destroyers,” that can actually eliminate the ability to taste sugar in your mouth, thereby reducing your cravings for sugar. Any natural fruit can also do this.

Meanwhile, Gymnema Sylvestre has shown promising results in safely controlling blood sugar levels in diabetics, while helping with weight loss, hypoglycemia, high cholesterol, anemia and digestion problems.

This herbal remedy is thought to work via gymnemic acid, its active ingredient. Gymnemic acid molecules have a unique shape that are similar to glucose, meaning they are able to fill cell receptors in the lining of your intestines, preventing uptake of sugar molecules and resulting in lower blood sugar levels.

Meanwhile, gymnemic acid and Gymnema leaf extract interfere with the ability of your taste buds to taste sweet or bitter. It’s thought that by inhibiting this ability, people taking it will limit their intake of sweets, which further helps blood sugar levels.

The most effective form of this ancient herb that Sixwise has found is Beta Fast Glucose Balance.

Beta Fast Glucose Balance is made from the finest quality extract of Indian Gymnema sylvestre leaf, and is the first and only extended-release supplement to have controlled clinical human trials.

From the July 2009 Scientific American Mind

How Refined Fructose Impairs the Memory

New study reveals how the simple sugar impedes recall

By Aimee Cunningham

Americans consume more refined fructose than ever before, yet concerns remain that the sugar, used to sweeten beverages and processed foods, poses health risks. In animals, fructose-rich diets increase the production of fat and promote resistance to the energy-regulating hormone insulin. New research suggests that memory suffers as well, at least in rats.

Neuroscientist Marise B. Parent of Georgia State University and her colleagues fed 11 adolescent rats a diet in which refined fructose supplied 60 percent of the calories. For 10 other rats, cornstarch took the place of the sweetener. The scientists trained the rats to find a submerged platform in a pool, with the help of surrounding cues.

Two days after the training ended, Parent’s group removed the pool’s platform and recorded where the rats—now adults—swam. Whereas the control group spent most of its time around the platform’s old location, the fructose-fed rats visited this area significantly less often. “They can learn” the platform’s location, Parent notes, “but they just can’t remember it for long periods.”

Another research group has shown in hamsters that insulin resistance can affect the hippocampus, a part of the brain critical for learning and remembering facts and events. Parent’s team is examining whether the hippocampus of the memory-impaired rats became resistant to the
hormone. Parent is also interested in how the addition of glucose, another sugar, would affect her results. The body metabolizes fructose and glucose differently, she explains. People tend to consume both sweeteners at the same time, as high-fructose corn syrup (which is most commonly 55 percent fructose and 45 percent glucose) and table sugar (half fructose and half glucose), and glucose aids the body’s absorption of fructose.

SINthetic Fructose can trigger cancer cells to grow faster, study finds

It’s been blamed for a host of health problems including obesity, diabetes, high triglycerides (blood fats), metabolic syndrome and fatty liver.

Now, a study published last week in the journal Cancer Research adds to the growing controversy over the potential health risks of synthetic high fructose corn syrup, a form of sugar added to thousands of foods and soft drinks.

According to researchers from the University of California, Los Angeles, sucrose (table sugar) and refined high fructose corn syrup triggers pancreatic cancer cells to grow more quickly.

The major sources of refined fructose in our diet are sucrose (table sugar) and high fructose corn syrup, a sweetener found in soft drinks, fruit drinks, candy, cookies, ketchup, salad dressings, cereal bars, frozen dinners and countless other processed foods.

In the study, researchers took pancreatic tumours from patients and grew the cancerous cells in petri dishes. They then added glucose to one set of cells and fructose to another. Using mass spectrometry, a technique that measures how much of a compound is in a mixture, the scientists were able to follow the sugars in the cells to determine what they were being used for.

“It’s estimated that Canadians consume 13 per cent of our day’s calories – about 16 teaspoons worth – from added sugars, including sucrose, maple syrup, honey, high-fructose corn syrup, glucose syrup and dextrose.”

While it’s widely known that cancer cells use glucose to fuel their growth, last week’s findings were the first to link fructose to cancer growth. The cancer cells grew at fructose concentrations easily attainable in our North American diet and they did so at a similar rate to glucose.

However, the data showed that cancer cells used fructose and glucose in very different ways, even though they are structurally similar. Compared to glucose, fructose was a potent activator of a key cellular pathway that drives cancer cell division.

Not only did cancer cells prefer fructose, the sugar also triggered cellular activities that enabled malignant cells to use both glucose and fructose more rapidly.

Although this study was done in pancreatic cancer, the researchers noted that the results may not be unique to that type of cancer.

The findings have significance for people with pancreatic cancer, given our dramatically increased consumption of refined fructose over the past 40 years.

Since its introduction in the 1970s, high-fructose corn syrup – often listed as glucose-fructose on ingredient lists – has been a boon to the food industry. It’s cheaper than table sugar, easier to blend into foods, and tastes sweeter.

This isn’t the first time the potential health hazards of refined fructose have made headlines. Last year, a study conducted in overweight adults found that drinking fructose-sweetened beverages – three servings a day for 10 weeks – led to elevated blood triglyceride (fat) and LDL (bad) cholesterol.
levels, risk factors for heart disease.

Fructose-sweetened drinks also caused increased fat production in the liver and deep intra-abdominal fat gain. (Intra-abdominal fat sits closer to the organs and increases the risk of heart disease and diabetes.)

And earlier this year, a Princeton University research team found that rats with access to high-fructose corn syrup gained significantly more weight and had higher blood triglycerides than those with access to table sugar (sucrose), even though their overall calorie intake was the same.

Fructose is handled almost exclusively by the liver where it’s more likely be metabolized into fat. Recent work also suggests that fructose influences appetite hormones. A high intake of fructose may blunt satiety and trick you into overeating.

It’s becoming more and more evident that fructose and high-fructose corn syrup are different from other sweeteners when it comes to weight gain and obesity. And last week’s findings hint that the same may be true for cancer cell growth.

It’s estimated that Canadians consume 13 per cent of our day’s calories – about 16 teaspoons worth – from added sugars, including sucrose, maple syrup, honey, high-fructose corn syrup, glucose syrup and dextrose.

In an effort to help cut heart disease risk, the American Heart Association advises slashing added sugars to 5 per cent of daily calories – five teaspoons worth (80 calories) for women and 9 teaspoons (144 calories) for men.

The following tips will help you reduce your intake of added sugars, especially high-fructose corn syrup and sucrose:

Scan ingredient lists

Added sugars go by many names such as brown sugar, corn syrup, dextrose, fructose, fruit juice concentrate, glucose-fructose, honey, invert sugar, liquid sugar, malt, maltose, molasses, rice syrup, table sugar and sucrose. You might be surprised to see how many different types of sugars are added to one product.

Read nutrition labels

The Nutrition Facts box discloses the grams of sugar in one serving of food. (Four grams of sugar is equivalent to one teaspoon of table sugar.) Keep in mind, however, the sugar number includes both naturally occurring sugars (e.g. fruit or milk sugars) and sugars added during processing.

When buying packaged baked goods or cereal bars, choose products with no more than half the total carbohydrate from sugar.

Choose breakfast cereals with no more than six to eight grams of sugar per serving. Cereal with dried fruit is an exception.

Avoid sugary drinks

Replace soft drinks, fruit drinks, lemonade, sweetened iced tea and the like with plain water, low fat milk, unflavoured soy beverage, vegetable juice or tea.
Fruit and veg - 5 a Day

Most people know that we should be eating more fruit and veg. But most of us aren’t eating enough. Did you know that we should be eating at least five portions of fruit and veg every day? You can choose from fresh, frozen, tinned, dried or juiced. But remember, while potatoes don’t count towards your 5-a-day they do play an important role in your diet because they’re a starchy food.

How much fruit and veg should I be eating?

Lots! Fruit and veg should make up about a third of the food you eat each day. And it’s also important to eat a variety. Five-a-day is a good, achievable target. If you count your portions each day it might help you to increase the amount you eat.

But what is a portion?

ONE portion = 80g = any of these
- 1 apple, banana, pear, orange or other similar sized fruit
- 2 plums or similar sized fruit
- ½ a grapefruit or avocado
- 1 slice of large fruit, such as melon or pineapple
- 3 heaped tablespoons of vegetables (raw, cooked, frozen or tinned)
- 3 heaped tablespoons of beans and pulses (however much you eat, beans and pulses count as a maximum of one portion a day)
- 3 heaped tablespoons of fruit salad (fresh or tinned in fruit juice) or stewed fruit
- 1 heaped tablespoon of dried fruit (such as raisins and apricots)
- 1 handful of grapes, cherries or berries
- a dessert bowl of salad
- a glass (150ml) of fruit juice (however much you drink, fruit juice counts as a maximum of one portion a day)

Getting your five portions a day

If you eat one or two portions with each meal and have the occasional fruit snack you might be surprised at how easy it is to eat five-a-day.

At breakfast you could:
- add a handful of dried fruit to your cereal
- eat half a grapefruit or an apple
- drink a glass of fruit juice
At lunch you could:
• eat a bowl of salad
• have a banana sandwich
• have some fruit salad

At your evening meal you could:
• add vegetables or pulses to your curry, casserole or stir fry
• serve at least two types of vegetables with your fish, chicken or meat

And don’t forget, when you fancy a snack, reach for an apple, banana or perhaps even some dried fruit.

Getting the most out of fruit and veg

Some vitamins and minerals can be easily lost when fruit and veg are prepared or cooked, so try to remember:
• eat fresh fruit and veg as soon as possible rather than storing for a long time - or use frozen instead
• don’t overcook. Start with boiling water and cover tightly to keep in the steam, because this speeds up the cooking. You could use a steamer or a microwave
• use as little water as possible when you cook fruit and veg. If you use the cooking water for sauce or soup, you’ll recapture some of the lost vitamins and minerals
• avoid leaving any vegetables open to the air, light or heat if they have been cut. Always cover and chill them. But don’t soak, because vitamins and minerals can dissolve away
• don’t keep food hot for too long because vitamin levels start to drop within a few minutes

Why it’s important
Fruit and veg are good sources of many vitamins and minerals, yet most of us don’t eat enough of them.

There is evidence to suggest that people who eat lots of fruit and veg are less likely to develop chronic diseases such as coronary heart disease and some cancers.

And don’t forget, fruit and veg are also very low in fat.

Recommendations
Eat a wide variety of fruit and vegetables and aim for at least five portions a day. Try to avoid:
• AVOID adding fat or rich sauces to vegetables (such as carrots glazed with butter)
• AVOID adding sugar or syrupy dressings to fruit (such as stewed apple)
Handedness in Nature + Nutrition

As we explore the areas of nutrition, we must be reminded that all we are is a massive set of electrons in energy states around protons, neutrons, and other particles. Since the electrons never touch each other and they are the outer parts of every atom, every molecule, everything, and nobody really touches anything. We are energy fields. The only thing that touches anything other than fields is photons. Photons are absorbed and transmitted by these electrons. The quantic state of the electrons in nature make for a difference in the way it deals with photons.

Certain things have a handedness or a specific structure of the electrons so as to divert photons to the right of left. This is the handedness of the molecule. Dextro is for right, Levulo for left. Our biology has been made so as this is very important. We need left handed amino acids and proteins and right handed sugars for cellular metabolism. We have made the full thesis on sugars and now we will address the issue of proteins. All of this is based on Quantum theory and this Biology is quantic in nature.

The term “chiral” (from the Greek for “hand”) is applied to molecular systems whose asymmetry results in handedness; that is, the existence of a pair of nonsuperimposable mirror-image shapes (as illustrated by the relationship between one’s right and left hands). Lord Kelvin coined the term “chirality” in 1884, but it did not come into common usage until the 1960s. Many macroscopic examples of handed systems exist, including any object that features an inherent spiral or twist that can exhibit a left- and right-handed form: scissors, spiral staircases, screw threads, gloves, and shoes. Some mineralogical materials exhibit handedness in the solid state. In 1801 the crystallographer René-Just Haüy (1743–1822) observed that there were right- and left-handed quartz crystals, a phenomenon known as hemihedrism. The term “enantiomorphous” (“in opposite shape”) was created to describe the macroscopic relationships between nonsuperimposable, mirror-image crystalline forms.
Left or right: why does nature have such a clear a preference?

Researchers in the US have shown that the presence of spin-polarized electrons can make a chemical reaction involving “right-handed” molecules occur faster than the same reaction involving “left-handed” molecules. The discovery could help scientists understand why nature favors a certain handedness in many biological molecules. So electron spin can directly affect the formation of the handedness of the biological molecule. So now we have the proof we needed to show that electron spin is involved in health.

An important question facing those trying to understand the origins of life is why important biological molecules have a certain handedness or “chirality”? Amino acids, for example, can be either right- or left-handed mirror-images of each other. However, they are always left handed when produced by living organisms. This is important because chirality can affect how a molecule takes part in the chemical reactions crucial for life.

Scientists believe that two external agents could be responsible for chirality in biological molecules: circularly polarized light and spin-polarized electrons.

Life from outer space?

While circularly polarized light is rare on Earth, astronomers know that it can be produced in the interstellar medium — leading some to speculate that the precursors to chiral biological molecules were created in space and somehow transported to Earth. The origin of this homochirality in biology is the subject of much debate. Most scientists believe that Earth life’s “choice” of chirality was purely random, and that if carbon-based life forms exist elsewhere in the universe, their chemistry could theoretically have opposite chirality. However, there is some suggestion that early amino acids could have formed in comet dust. In this case, circularly polarised radiation (which makes up 17% of stellar radiation) could have caused the selective destruction of one chirality of amino acids, leading to a selection bias which ultimately resulted in all life on Earth being homochiral.

Low-energy spin-polarized electrons are produced when X-rays and other ionizing radiation strike iron, nickel and other magnetic materials. These materials are relatively abundant and such interactions could have occurred on the early Earth, on other planets and even in space.

What is the difference between L-Taurine and Taurine, or between L-Glycine and Glycine?

The natural plant and animal amino acids are typically the “L form”, as in L-arginine, L-cysteine, etc. Synthetic forms are denoted as “D forms”, such as D-Methionine and D-Carnitine. But there are 2 aminos that have only one form without these variations: Glycine and Taurine. These two aminos are sometimes called L-Taurine or L-Glycine, but are more properly called just “Taurine” and “Glycine”. Regardless of the name used, they are always natural amino acids.

Most aminos have a property that, when the molecule is put into a solution, it will polarize and rotate light photons either to the left or right. The Greek words denoting left and right are Levo for left and Dextro for right, so the letters L and D are used to distinguish these forms. This polarization and rotation of light is called “optical rotation”. The differing L and D forms are called stereoisomers. For amino acids that polarize light, the L form is the natural form.

However, Taurine is an amino acid that does not polarize light. It thus is properly called just “Taurine”, without L or D configurations. While some label Taurine as “L-Taurine”, that name is not technically correct. “Taurine” is the same exact molecule and form as what is commonly mislabeled as “L-Taurine”. This why taurine is in the energy drinks. Taurine for bull is in the Red Bull drink.

There is another amino acid that lacks a potential optical rotation. Glycine is a very simple molecule that comes only as “Glycine”, also lacking different L or D stereoisomer forms. Glycine, Glutamic acid and Taurine can cross the blood brain barrier easier for this reason. They act as secondary suppliers of energy to the brain cells. And thus are key components of the energy drink.

The D forms of amino acids sold commercially are considered to be synthetic. However, D forms of amino acids are not always synthetic. There are several D forms that exist in nature. In addition, amino acids can be racemized by the body and go back and forth between the D form and the L form quite easily. However, only L forms can be incorporated into proteins. For the purposes of dietary supplements, the L forms are natural and the D forms are synthetic. DLPA and DL-methionine are actually racemic mixtures of both L and D forms.

But there is no such thing as D-Taurine or D-Glycine; in other words, no synthetic forms exist of these two aminos since each only comes as one isomer that doesn’t polarize and rotate light to the right. Nor are there really L forms of these, since they do not polarize and rotate light to the left, either. There are simply single, natural isomers of just plain Glycine and Taurine.

Don’t assume that all D or L forms of molecules are good or bad, since it really depends on the individual substance concerned. For example, the D isomers of vitamin E are the natural forms
and the L isomers are synthetic; just the opposite of amino acids. Thus the terminology and forms of what is natural or synthetic will vary by substance. Some natural molecules exist as L form, some as D form and some have only one form, whether in food or if synthesized.

In nature we need left handed amino acids in our cells, only right handed sugars will enter the cell, and we need many right handed fatty acids. The Handedness is very important to life.

Because cancer tumors have much more D form of amino acids and proteins it was thought that ingestion of them causes cancer. This has not been fully dismissed but it is not such a rule. We believe that ingestion of synthetic proteins will aggravate cancer and possibly contribute to the growth. So in putting together or good protein bad protein list we need to say that items that have or cause D-amino acid formation should be avoided. Artificial sugars when heated as in cooking form D amino acids. Synthetic proteins and artificial food additives contain D amino acids and also make them on cooking.

D-form amino acids tend to taste sweet, whereas L-forms are usually tasteless. Spearmint leaves and caraway seeds, respectively, contain L-carvone and D-carvone - enantiomers of carvone. These smell different to most people because our olfactory receptors also contain chiral molecules that behave differently in the presence of different enantiomers. Thus the artificial sweeteners with the Dextro [poisonous] amino acids are to be avoided and specifically not used in cooking.

**L-amino acids and plant stimulation**

**THE EFFECT OF ENZYMATICALLY EXTRACTED L AMINO ACIDS ON PLANTS**

Amino acids – the components in protein – are the building blocks of all cell formation. Amino acids are necessary components in many processes in the plant, among them the photosynthesis which produces carbohydrates necessary for plant growth. All plants are capable of synthesizing amino acids, but it is a complex and energy demanding process that requires carbon and oxygen, hydrogen and nitrogen. The application of amino acids allows therefore for energy saving and better plant development during the critical stages of a plant’s cycle when it requires highly available elements.

**Amino acids:**

Amino acids are organic substances formed by an asymmetrical carbon atom that is joined to:

- An Amine group –NH₂
- A Carboxylic group –COOH
- Two radicals –R and R’ characteristic of each amino acid.

Theoretically, the number of possible amino acids in nature is infinite. However, for plant nutrition purposes, the relevant amino acids are L-Alfa types in which the R generic radical is substituted by a Hydrogen one.

Plants, like any other organism, need certain components to promote their growth, as well as soil, sun, rain and air. The basic components of living cells are proteins, with their basic units, amino acids. Proteins are formed by amino acid sequences. Plants synthesize amino acids from primary elements: Carbon and oxygen obtained from the air, hydrogen from water. This helps to form carbohydrates through photosynthesis, and combined with the nitrogen obtained by the plants through the soil, it conducts the synthesis of amino acids through metabolic routes.

**L and D amino acids**

Stereochemistry is important in living organisms because its properties can change depending on the spacial distribution of its atomic components. All amino acids, with the exception of glycine (which doesn’t have asymmetric carbon), can be found in forms L and D, in function of the spacial disposition of the groups that join asymmetric carbon. This disposition diverts polarized light in one way or another. This optical characteristic is what divides amino acids into L or D.

Only L-Alfa amino acids form part of the proteins utilized by plants and promote changes in plant metabolic activity.
Total Amino Acids:
All amino acids are found as either free form, peptide or protein form:

- Free Amino Acids: Free amino acids are individualized in monomer form and not bound to another by peptic unions. Due to their lower molecular weight, plants assimilate this form of amino acids the most quickly and their effects on the metabolic processes of the plant are the most profound. As such, free amino acids are of primary importance in plant nutrition.

- Peptides: When two or more amino acids are bound to one another (by peptic union), they form a peptide. The greater the length of the peptide (more amino acids bound together), the more difficult the direct assimilation by plants.

- Proteins: The joining of different chains of polypeptides forms a protein. The structural units of proteins are amino acids joined in a sequence and characteristic order of each type of protein.

Effect on plants:
Amino acid use in essential quantities is a well known method to increase crop yield and quality. Even though plants have the inherent capacity to biosynthesize all the amino acids needed from nitrogen, carbon oxygen and hydrogen, the biochemical process is quite complex and energy consuming. As such, the application of amino acids such as those contained in HYT B allow for the plant to save energy on this process, which can be dedicated to better plant development during critical growth stages.

Amino acids are fundamental ingredients in a protein’s biosynthetic process. Nearly twenty amino acids are involved in the biosynthetic process. Studies have shown that amino acids can directly or indirectly in a plant’s physiological activities.

Amino acids are applied through foliar feeding, absorbed through the plant’s stomata or via the root area when incorporated into the soil. This also helps improve micro flora, which in turn, facilitates the nutrient assimilation.

Protein biosynthesis:
Proteins have different functions: Structural (supportive), metabolic (enzymes), transport, amino acid reserve, and other functions in which amino acids are involved. Only L-amino acids can be assimilated by plants. D-amino acids are not recognized by enzymes and do not participate in the protein biosynthetic process. Therefore, amino acids obtained through organic synthesis are not well assimilated. Some amino acids like L-methionine do not have a structural function the protein’s metabolism. It does, however, act a bio-stimulant as it activates its biosynthesis.

Stress resistance:
Stressful conditions, such as high temperatures, low moisture, frosts, parasite attacks, hail, flooding, disease or phytotoxic effects due to the application of pesticides, have a negative effect on plant metabolism with a corresponding decrease in crop quality and quantity.

The application of amino acids before, during and after stressful conditions, provides plants with amino acids that are directly related to physiological stress therefore providing a prevention and recuperation effect. This frees the plant from toxins that were accumulated during the tense period.

Effects of photosynthesis:
Photosynthesis is a plant’s most metabolically important pathway. Through it, a plant synthesizes sugars from carbon dioxide, water and luminous energy. These sugars (carbohydrates) are the source of energy for a plant’s other metabolic processes. A low photosynthetic rate caused by stress can decrease a plant’s growth, and ultimately cause its death. Chlorophyll is the pigment molecule that gives leaves their green color, and it is responsible for the harvesting of solar energy. This energy will be employed for the synthesis of sugars from water and carbon dioxide.

Glycine and glutamic acid are fundamental metabolites in the formation of vegetable tissue and chlorophyll synthesis. These amino acids raise the concentration of chlorophyll in plants. This increases the absorption of luminous energy, which leads to greater degrees of photosynthesis.

Effect on stomata:
Stomata are cellular structures that control a plant’s hydro balance, as well as the absorption of gases and macro and micro nutrients. A stoma’s openings are controlled by external factors (light, moisture, temperature and concentration of salts), and by internal factors (amino acid concentration, abscisic acid, etc.).

Stomata close when light and moisture are low, and temperature and salt concentration are high. When stomata close, photosynthesis and transpiration (low macro and micro nutrient absorption) are reduced, and respiration (destruction of carbohydrates) is increased. When this occurs, a plant’s metabolic balance is negative. Catabolism is greater than anabolism (greater molecule destruction). This causes metabolism to decrease and plant growth to stop. L-glutamic acid acts as an osmotic agent for the protective cells cytoplasm, which favors the opening of stomata.

Chelating effect:
Amino acids have a chelating effect for micronutrients. When jointly applied with micro elements, their absorption and transportation inside the plant simplifies. This is caused by chelation and membrane permeability. L-glycine and L-glutamic acid amino acids are known as very effective chelating agents.

Amino acids and Phytohormones:
Amino acids are the precursors or activators of phytohormones and growth substances. L-Methionine is a precursor of ethylene and other growth factors such as spermine and spermidine, which are synthesized from 5-adenosyl methionine.

L-tryptophan is a precursor of auxin synthesis. L-tryptophan is used in plants only in its L-form. L-tryptophan is available only if protein hydrolysis is carried out by enzymes. If the hydrolysis is acid or alkaline, as it is performed in some European countries, L-tryptophan is destroyed.

The L-arginine amino acid induces flower and fruit related hormone biosynthesis.

Pollination and fruit formation:
Pollination is the transportation of pollen to the carpel that makes fecundation and fruit formation possible.

L-proline helps pollen fertility. L-lysine, L-methionine, and L-glutamic acid are essential amino acids for pollination. These amino acids increase pollen germination and the length of the pollen tube.
Floral Balance in the Soil:
Microbial floral balance in an agricultural soil is a basic factor for a good organic matter mineralization, as well as providing sound structure and fertility in the root area. L-methionine is a precursor of growth factors that stabilize cell membranes in microbial flora.

In General:
L-glutamic acid and L-aspartic acid, through transamination, give make way for the rest of the amino acids. L-proline and hydroxiproline act mainly in the plant’s hydro balance. They act on a cell’s wall by increasing resistance to unfavorable weather conditions.
L-alanine, L-valine, and L-leucine increase the quality of fruits. L-histidine assists in the appropriate fruit maturation.

Observations When Applying Amino Acids to Plants:

Trophic effect:
Free amino acids, when quickly metabolized, give birth to biologically active substances. They also invigorate and stimulate vegetation.

Hormonal effect:
Free amino acids stimulate the formation of:
- Chlorophyll
- Indole-3-Acetic acid
- Vitamins
- Various enzymatic systems

Trophic + Hormonal effect
- Flowering is stimulated
- Better fruit setting
- Higher precociousness, size and coloration of fruits.
- Greater sugar richness
- Greater vitamin content in fruits.

Amino acid effect on plants:

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<thead>
<tr>
<th>Amino Acid</th>
<th>Effect</th>
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<tbody>
<tr>
<td>L-Aspartic Acid</td>
<td>Promotes Germination</td>
</tr>
<tr>
<td>L-Glutamic Acid</td>
<td>Chelation</td>
</tr>
<tr>
<td></td>
<td>Stimulates Growth</td>
</tr>
<tr>
<td></td>
<td>Promotes Germination</td>
</tr>
<tr>
<td>L-Arginine</td>
<td>Cold Resistance</td>
</tr>
<tr>
<td>L-Cysteine</td>
<td>Chelation</td>
</tr>
<tr>
<td>L-Phenylalanine</td>
<td>Promotes Germination</td>
</tr>
<tr>
<td>L-Glycine</td>
<td>Chelation</td>
</tr>
<tr>
<td>L-Histidine</td>
<td>Chelation</td>
</tr>
<tr>
<td>L-Alanine</td>
<td>Cold Resistance</td>
</tr>
<tr>
<td></td>
<td>Chlorophyll synthesis stimulation</td>
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<td>L-Lysine</td>
<td>Chelation</td>
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<td></td>
<td>Promotes Germination</td>
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<tr>
<td>L-Methionine</td>
<td>Promotes Germination</td>
</tr>
<tr>
<td></td>
<td>Stimulates Ethylene Production</td>
</tr>
<tr>
<td>L-Proline</td>
<td>Anti-stress action</td>
</tr>
<tr>
<td>L-Serine</td>
<td>Auxin Precursor</td>
</tr>
<tr>
<td>L-Threonine</td>
<td>Promotes Germination</td>
</tr>
<tr>
<td>L-Tryptophan</td>
<td>Auxin Precursor</td>
</tr>
<tr>
<td>L-Valine</td>
<td>Auxin Precursor</td>
</tr>
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Plants make Amino Acids from the Primary elements, the Carbon and Oxygen obtained from air, Hydrogen from water in the soil, forming Carbon Hydrate by means of photosynthesis and combining it with the Nitrogen which the plants obtain from the soil, leading to synthesis of amino acids, by collateral metabolic pathways. Only L-Amino Acids are part of these Proteins and have metabolic activity.

So now after this discussion we have to give the lesson of what types of protein we need to ingest.

Good versus Bad Protein Food

Some foods are better protein sources than others. However, some higher-protein food sources may have higher carbohydrate and fat content.

Learn to make good choices by using the list below.
Good Sources of Protein

**Meat**
- Beef (lean cuts)
- Pork
- Veal

**Fish**
- Salmon
- Sardines
- Tuna
- All other species of fish

**Poultry**
- Chicken (skinless)
- Turkey breast

**Dairy**
- Whey protein powder
- Cottage cheese (low fat)

**Vegetable: (less concentrated)**
- Beans (lentils, adzuki beans & others)
- Nuts (peanuts, almonds, pistachios)
- Peas (split peas, chickpeas)
- Soybeans
- Grains & seeds (be aware of fat content)

**Protein sources to Avoid or Limit**
- Luncheon meats any product with nitrates
- Whole milk
- Ham, bacon, pork chop
- Cheddar Cheese
- Any synthetic chemical additive
- Any synthetic chemical substance

- Any food cooked with artificial sweeteners. When you cook a food with most artificial chemical sweeteners you make bad D type amino acids.

**Semi Bad protein food:**
- Shrimp, clams, scallops, starfish
- Other cheeses

**The Simple Rule**
If in doubt choose protein from foods that are unprocessed or minimally processed. No additives, less cooking, some fresh and raw, good sugars, good fats, good proteins.

**Best Protein Foods: Good Protein Food vs Bad Protein Foods**
It’s common knowledge that fats are bad, carbohydrates are suspicious and proteins are harmless—or at least that’s what we thought. While most proteins are good there is a certain category of protein which harm the body.

You can recognize a good protein by the basic nutrients, by the fatty omega 3 acids and by the big or small quantity of saturated fats. Fatty omega 3 acids are a type of polyunsaturated fats—good fats—which is found in fish meat and has beneficial effects on people with heart problems.

*A list of good protein foods*
• a cup of white beans contain 0.5 ounces of protein, 0.03 ounces of fat and 1 cup of chickpeas contain 0.5 ounces of protein, 0.1 ounces of fats. Beans and vegetables are recommended by doctors. They have a rich protein and fiber content. The mediterranean diet was proven healthy by its high chickpea intake.

• 1 ounce of ham contains 0.3 ounces of protein and 0.4 ounces of fat. The Atkins diet allows the consumption of ham for weight lose, but it’s rich in saturated fats, contains too many preservatives and can impair kidney function.

• 1 ounce of boneless chicken contains 0.2 ounces of protein and 0.08 ounces of fat.

• 1 egg without the yoke contains 0.2 ounces of protein and 0.08 ounces of fat. Eggs are often forbidden because of their high cholesterol content and of the risk of inducing heart attacks. Happily if you remove the yoke they’re no longer a threat.

• 1 ounce of mutton contains 0.2 ounces of protein and 0.2 ounces of fat

• 1 ounce of pork contain 0.2 ounces of protein and 0.1 ounces of fat.

• 1 ounce of red meat contains 0.2 ounces of protein and 0.1 ounces of fat

• 1 piece of skimmed cheese contains 0.2 ounces of protein and 0.2 ounces of fat

• 1 cup of almond contain 0.2 ounces of protein and 0.4 ounces of fats

• 1 ounce of salmon contains 0.2 ounces of protein and 0.1 ounces of fat

Meats in your Diet

Humans were once complete herbivores. All Animals need amino acids to survive. Amino acids can be found in plants, but for humans no one plant provides all of the amino acids we need. So we must use a variety of plants and to be a complete vegetarian it takes skill to mix plants to get the amino acids. Humans had evolved to wander from bush to bush. Then humans developed hunting tools and learned to eat fresh meat. But degenerative disease comes in with the invention of fire and cooking.

Cooking meats makes carcinogens. Open flame char broiling the worst. When we burn anything carcinogenic are formed. Burnt compounds are carcinogenic whether they are inhaled into the lungs like smoke, or on a food taken into the digestive tract. If it is burnt don’t eat it. Cooking destroys the good fatty acids, the enzymes, and the vitamins. The more cooked the less nutrition, the more disease.

Humans have an oral teeth design of an herbivore. The TMJ (Temporal Mandibular Joint) of the jaw is designed for plants and chewing, just like a cow. Carnivore teeth and jaw are for ripping and swallowing quickly. We are designed to chew.

Humans have a digestive tract equivalent to the gorilla (an herbivore). Carnivores have short sixteen foot long digestive tract to dissolve the meat. Herbivores have longer tracts over 25 feet long, like the human. Longer tract is designed for the vegetables. Humans have an herbivore digestive tract.

Humans have an herbivore set of legs. If we had to catch an animal for lunch with just our bodies we would mostly starve. Before tools were invented our ancestors had to eat plants. We cannot run fast enough, swim fast enough or jump high enough to feed our families without weapons.

After the recent invention of weapons (15,000 years ago) humans have developed a sense to eat meat. Humans got exercise hunting. Humans have developed a carnivore taste, with an herbivore body. So we have become Omnivores. No human can live healthy on just dead animal flesh.

The Price Pottenger Institute of San Diego is designed to show the power of the work of these two men. Their genius work goes unheralded today. Dr Price showed that degenerative disease is relatively unknown in societies where they do not have dextrose sugar and cooking. The Eskimos of the north have no dental problems of degenerative disease till cooking and dextrose sugar are put into their diet. Several other societies were also found to have similar results. Cooking and dextrose sugar mark the beginning of degenerative disease. The famous Pottinger cat study showed this. Please review.
Fig. 53. No other primitive race seems to deserve so much credit for skill in obeying nature's laws as these primitive Aborigines because of the perpetual drought hazards of much of the land they live in. Half of Australia has less than ten inches of rain per year. Note the magnificent dental arches and beautiful teeth of these primitives. Tooth decay was almost unknown in many districts.

Fig. 54. Wherever the primitive Aborigines have been placed in reservations and fed on the white man's foods of commerce dental caries has become rampant. This destroys their beauty, prevents mastication, and provides infection for seriously injuring their bodies. Note the contrast between the primitive woman in the upper right and the three modernized women.
It turns out that the cooking and the smoke are the leading carcinogenic compounds. In Japan where Shabu Shabu (cooking only in boiled water) was found to limit disease. Stir fry cooking or just simple minimal cooking was shown to also decrease degenerative disease. The heat and smoke make carcinogenic toxins. The diseases of parasites, injury, and infections need to be controlled to limit disease in general. But cooking deforms nutrients, and makes carcinogens. Dextrose sugar weakens the immune system. And this is the start of degenerative disease.

Since animals have the amino acids locked in their proteins, we can get the amino acids by eating animal flesh. But our digestive system needs to digest the protein to get the amino acids. This is difficult as we age or are under stress.

We grow the most during our first year of life when we double or more our weight and height. Mother’s milk is the perfect food, and it is only 2% protein. A gorilla has an identical digestive system to us, he is 600 lbs and can throw a car. His diet is 2% protein. The massive cow, horse, elephant have diets 2% protein. We do not need large amounts of protein. We need amino acids. We can get all the amino acids from bean sprouts. And if someone craves meat, a handful of bean sprouts will usually satisfy them in about 15 min. But culturally our taste buds like heated cooked dead animal flesh. The protein rush and heated fats are tasty. Thus carnivores crave meat. And humans have evolved to be omnivores.

The major dangers of meat are processed chemicals, carcinogens from cooking, excess bad fats and cholesterol. Putrefaction of red meat in the colon makes it more dangerous. Our digestive system is not designed to take in large quantities of meat. When we improperly combine foods and disobey the rules of the stomach we make everything worse. So eat meat at your caution. The less cooking the better, the less meat the better, the less chemicals the better.
Eating Healthy is good for many reasons. It helps you feel better, helps your body’s immune system stay strong and wards off illness in general. You have more energy, better concentration and a heightened overall sense of wellbeing. A healthy diet consists of many things, including the meats you consume. If you are like many other Americans, your meat diet probably includes higher fat meats, such as different types of red meat. Making your diet healthier can start with replacing these higher fat meats with healthy alternatives. This article will help you do just that.

**DID YOU KNOW?**

Lean cuts of meat such as chicken breast are lower in salt than processed meats such as ham and bacon. Too much salt can raise blood pressure in adults and children so choose lean meat more often than processed meat.

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**Instructions**

**How to Distinguish Between High-Fat Meats and Healthy Alternatives**

**Step 1**

Avoid all processed meats. Like bologna, lunch meats, Hot dogs, sausage, any meats using nitrites and or nitrates to make into a congealed package.

**Step 2**

Avoid pork as much as possible. Reserving it for maybe once or twice a year as a holiday celebrations.

**Step 3**

Avoid excess fatty meats and meats raised in toxic areas with too many chemicals. Organic meats are then the best. Learn what other meats and alternatives are available for you to eat that have less fat content and are healthier. Most of the healthier meats will be white meats or red meats that are lean. Some of these white meats include veal and chicken. You can also use meat substitutes such as tofu or veggie burgers.
How To Eat the Healthy Alternatives, make meat the second dish to serve at a meal. Instead of a side vegetable, use meat as a side dish.

Step 1
Start with hamburger. The easiest way to make a modification here is to use a leaner organic type of beef. If the meat you currently use for hamburger is 75%/25% lean, switch to 90%/10% lean. Or, you could consider a different type of burger, such as a veggie burger or turkey burger. Use spices to add flavor. Use seafood, chicken, turkey, duck, buffalo, ostrich and others more. Duck fat is less likely to go into human fat that the others. So use when there is a fat craving person at the table. But use organic, and use sparingly and wean them down.

Step 2
Change your pasta dishes. Use vegetable enhanced whole wheat pasta. If you were going to make Hamburger Helper, try making Chicken Helper. If you were going to make spaghetti and meatballs with hamburger, try using veal or lamb instead. Veal is actually considered a white meat and is much healthier for you. The young animals have less fat. And buffalo, ostrich, and other low fat meats are an excellent choice.

Step 3
If you can’t do away totally with your hamburger, eat it in less quantities and mix it with other things. Instead of making a veggie burger with no meat, try mixing in vegetables with the hamburger to make it healthier.

Step 4
Eat more seafood. Seafood has very low fat content. Just be careful not to add too many seafood dishes with a high cholesterol content, like shrimp and lobster. Your best bet is to eat lots of white fish, such as haddock, pollock and cod. The deeper the sea fish the more healthy oils. So Orange Ruffy is an excellent choice.

Step 5
Take any meal you used to eat and switch the meat from a higher fat one to a leaner alternative. If you used to eat meatloaf and mashed potatoes, make a meatloaf with chicken instead.

Step 6
Eat dishes that have no meat in them. Substitute some bean sprouts. There is no need to have meat for every meal. For lunch, instead of that Philly steak sandwich, try just having a large garden salad with mixed green lettuce, tomatoes, cucumbers, broccoli and carrots. Have whole-wheat bread with the salad to help make the meal more filling.

Step 7
If you are still hungry after the salad and bread, add soup to the meal. The soup could be one with beans, like meatless chili. A baked potato soup or noodle soup can also be hearty and satisfying.

Step 8
If you run out of ideas, look for cookbooks that deal with healthy alternatives to red meat. You can find e-books online or buy books at a popular bookstore. You can often get discounts on book purchasing by joining rewards programs at bookstores, such as by joining Borders Rewards at Border’s Bookstore. If your budget is extremely tight, check out books from the public library.
Tips & Warnings

- The more creative you are, the more alternative ideas you will come up with for replacing your higher-fat meats with healthy alternatives. Use spice.
- If you run out of creative ideas, talk to other people and ask them what recipes they use.
- It can be helpful to consult a physician when making major modifications in your diet.
- Be wary of cutting out meat from your diet altogether. There are many essential nutrients and minerals found in these meats that aren’t available elsewhere in your diet.
- When switching your diet choices to something new, be careful that you don’t create vitamin deficiencies by cutting out key sources of important nutrients. If you get rid of a red meat that was your sole source of iron, replace it with clams or certain cereals.
Two Pork eaters with their vegetarian friend in the middle

Pig & Pork - Toxic Facts

Pig gut and organs
The pig or swine is a very popular food item with most people. Yet Christians are unaware that the God they profess to believe in had condemned the eating of swine’s flesh. The condemnation was based on some very sound biological principles. Here are some facts on pork that prove it to be a very unhealthy food to eat:

- A pig is a real garbage gut. It will eat anything including urine, excrement, dirt, decaying animal flesh, maggots, or decaying vegetables. They will even eat the cancerous growths off other pigs or animals.
- The meat and fat of a pig absorbs toxins like a sponge. Their meat can be 30 times more toxic than beef or venison.
- When eating beef or venison, it takes 8 to 9 hours to digest the meat so what little toxins are in the meat are slowly put into our system and can be filtered by the liver. But when pork is eaten, it takes only 4 hours to digest the meat. We thus get a much higher level of toxins within a shorter time.
- Unlike other mammals, a pig does not sweat or perspire. Perspiration is a means by which toxins are removed from the body. Since a pig does not sweat, the toxins remain within its body and in the meat.
- Pigs and swine are so poisonous that you can hardly kill them with strychnine or other poisons.
- Farmers will often pen up pigs within a rattlesnake nest because the pigs will eat the snakes, and if bitten they will not be harmed by the venom.
- When a pig is butchered, worms and insects take to its flesh sooner and faster than to other animal's flesh. In a few days the swine flesh is full of worms.
- Swine and pigs have over a dozen parasites within them, such as tapeworms, flukes, worms, and trichinae. There is no safe temperature at which pork can be cooked to ensure that all these parasites, their cysts, and eggs will be killed.
- Pig meat has twice as much fat as beef and Toxic fat. A 3 oz T bone steak contains 8.5 grams of fat; a 3 oz pork chop contains 18 grams of fat. A 3 oz beef rib has 11.1 grams of fat; a 3 oz pork spare rib has 23.2 grams of fat.
- Cows have a complex digestive system, having four stomachs. It thus takes over 24 hours to digest their vegetarian diet causing its food to be purified of toxins. In contrast, the swine’s one stomach takes only about 4 hours to digest its foul diet, turning its toxic food into flesh.
- The swine carries about 30 diseases which can be easily passed to humans. This is why God commanded that we are not even to touch their carcase (Leviticus 11:8).
- The trichinae worm of the swine is microscopically small, and once ingested can lodge itself in our intestines, muscles, spinal cord or the brain. This results in the disease trichinosis. The symptoms are sometimes lacking, but when present they are mistaken for other diseases, such as typhoid, arthritis, rheumatism, gastritis, MS, meningitis, gall bladder trouble, or acute alcoholism.
- The pig is so poisonous and filthy, that nature had to prepare him a sewer line or canal running down each leg with an outlet in the bottom of the foot. Out of this hole oozes pus and filth his body cannot pass into its system fast enough. Some of this pus gets into the meat of the pig.

There are other reasons grounded in biological facts that could be listed to show why pigs and swine should not be eaten. But a true Christian should only need one reason why not to eat this type of food because God prohibited it.

“And the swine, because it divides the hoof, yet does not chew the cud, it is unclean unto you: you shall not eat of their flesh, nor touch their dead carcase.” - Leviticus 11:7,8; Deuteronomy 14:8

Those who say Christ abolished the law condemning pork are motivated by their stomach not Scripture. The problems with pork are biological, and Christ never changed the laws of biology.
PIGS will eat anything including urine, dirt, decaying animal flesh, maggots, or decaying vegetables and left overs of what people ate. They will even eat the cancerous growths off other pigs or animals. You are killing yourself slowly by eating pig. Pork is like death. The meat and fat of a pig absorbs toxins like a sponge. Their meat can be 50 times more toxic than beef. Pigs don’t sweat so the toxins remain within its body and in the meat. And then when a pig is butchered, worms and insects take to its flesh sooner and faster than to other animal’s flesh. In a few days the pig flesh is full of worms.

For some people pig is so delicious they must eat it. In the old days we would only eat pig once a year as a celebration usually the fall or winter to celebrate the harvest. Then it became twice a year to celebrate the spring. Then as people became more affluent they started to celebrate monthly then weekly and some daily. If you eat pig very often it will affect your health. Once or twice a year is not so much of a problem if it is well raised pig and well cooked.

Toxins and poisons in your environment. These are things everyone should know about

By Jonathan Elinoff

This list of 13 items was compiled to show others that our environment is not as safe as people hope it to be. What is more disturbing is that every single item listed is man-made and has been known to be harmful since it was injected into our lives. Activists fought against it then, they have since, and they remain fighting against these to this day.

1. DDT
DDT was supposed to be the magic bullet vs. the scourge of insect-borne diseases like malaria. Discovered in 1873, DDT (short for the less catchy dichloro-diphenyl-trichloroethane) wasn’t used widely until 1939, when Swiss chemist Paul Hermann Muller noted its effectiveness as a pesticide during World War II, a discovery that earned him a Nobel Prize in 1948. After the war, use exploded: from 1942 to 1972, some 1.35 billion lb. of DDT were used in the U.S.

But absent from the DDT mania was consideration of the environmental effects of dumping millions of pounds of potent pesticides each year. Rachel Carson’s seminal 1962 environmental tract Silent Spring was the first to call attention to the nasty little fact that DDT produced fertility and neurological problems in humans and accumulated up the food chain in wildlife, poisoning birds. Use of the compound plummeted, and in 1972, DDT was banned in the U.S. entirely.

**Effects on human health**

Potential mechanisms of DDT on humans are genotoxicity and endocrine disruption. DDT may have direct genotoxicity, but may also induce enzymes that produce other genotoxic intermediates and DNA adducts. It is an endocrine disruptor: The DDT metabolite DDE acts as an antiandrogen (but not as an estrogen). o,p’-DDT, a minor component in commercial DDT has weak estrogenic activity.

**Acute toxicity**

DDT is classified as “moderately toxic” by the United States National Toxicology Program (NTP) and “moderately hazardous” by WHO, based on the rat oral of 113 mg/kg. DDT has on rare occasions been administered orally as a treatment for barbiturate poisoning.

**Chronic toxicity**

**Diabetes**

Organochlorine compounds, generally, and DDT and DDE, specifically, have been linked to diabetes. A number of studies from the US, Canada, and Sweden have found that the prevalence of the disease in a population increases with serum DDT or DDE levels.

**Developmental and reproductive toxicity**

DDT and DDE, like other organochlorines, have been shown to have xenoestrogenic activity, meaning they are chemically similar enough to estrogens to trigger hormonal responses in animals. This endocrine disrupting activity has been observed toxicological studies involving mice and rats, and available epidemiological evidence indicates that these effects may be occurring in humans as a result of DDT exposure. There is therefore concern that DDT may cause developmental and reproductive toxicity.

**Other**

Occupational exposure to DDT (either as a farmer or a malaria control worker) has been linked to:

- Neurological problems
- Asthma

**Carcinogenicity**

DDT is suspected to cause cancer. The NTP classifies it as “reasonably anticipated to be a human carcinogen”, and the EPA classifies DDT, DDE, and DDD as a class B2 "probable" human carcinogens. The International Agency for Research on Cancer classifies it as a "possible" human carcinogen. These evaluations are based mainly on the results of animal studies.

There is epidemiological evidence (i.e. studies in humans) that DDT causes cancer of the liver, pancreas and breast. There is mixed evidence that it contributes to leukemia, lymphoma and testicular cancer.

**Breast cancer**

The question of whether DDT or DDE are risk factors of breast cancer has been the subject of numerous investigations. While individual studies have come to conflicting conclusions, the most recent reviews of all the evidence conclude that exposure to DDT before puberty increases the risk of breast cancer later in life. Until recently, almost all studies measured DDT or DDE blood levels at the time of breast cancer diagnosis or after. This study design has been criticized, since the levels of DDT or DDE at diagnosis do not necessarily correspond to the levels present in a woman’s body at the time when her cancer first started. Such studies have thus yielded conflicting results and taken as a whole “do not support the hypothesis that exposure to DDT is an important risk factor for breast cancer.” The studies of this design have been extensively reviewed.

2. Leaded Gasoline
Pull in to the local gas station and every pump has something in common. "Unleaded" is the new craze. For nearly six decades, gasoline companies ignored the known dangers associated with lead to get rich. Tetraethyl lead boosted the octane levels in auto fuel, but there was speculation surrounding the safety of that decision from Day One. In the Nov. 10, 1924, issue of TIME, a report showed that 35 men at the Standard Oil Company of New Jersey had come down with an "occupational disease." Symptoms ranged from insomnia to low blood pressure, all at the hands of lead poisoning. The EPA completed a full phaseout of lead gasoline in 1986, ending the quest to trade steady health for steady sales.

Qualms about leaded gasoline began with the environmentalists and health professionals. Apparently, leaded gasoline was incompatible with catalytic converters installed in many on-road vehicles being driven. Catalytic converters are devices used to reduce the toxicity levels of automobile emissions. They are, however, ineffective in the presence of lead due to a chemical alteration that results from their interaction. The Environmental Protection Agency (EPA) stepped in quickly to regulate amounts of auto exhaust, leading to the general disapproval of leaded gasoline use.

Moreover, health professionals determined that consumption of lead products, including leaded gasoline, correlated with the amount of lead found in the human bloodstream. This can cause lead poisoning, a condition that primarily causes neurological damage, gastrointestinal discomfort, and cognitive impairment in children.

3. Lead Paint

Lead paint or lead based paint (LBP) is paint containing lead, a heavy metal, that is used as pigment, with lead(II) chromate and lead(II) carbonate being the most common. Lead is also added to paint to speed drying, increase durability, retain a fresh appearance, and resist moisture that causes corrosion. In some countries lead continues to be added to paint intended for domestic use whereas in others regulation exists that prohibits this, though lead paint may still be found in older properties painted prior to the introduction of such regulation e.g. in the U.S. and the U.K. and Australia. Paint with significant lead content is still used in industry and by the military. For example, leaded paint is sometimes used to paint roadways and parking lot lines.

Although lead improves paint performance, it is a dangerous substance. It is especially damaging to children under age six whose bodies are still developing. Lead causes nervous system damage, stunted growth, and delayed development. It can cause kidney damage and affects every organ system of the body. It also is dangerous to adults, and can cause reproductive problems for both men and women.

One myth related to lead-based paint is that the most common cause of poisoning was eating leaded paint chips. In fact, the most common pathway of childhood lead exposure is through ingestion of lead dust through normal hand-to-mouth contact during which children swallow lead dust dislodged from deteriorated paint or leaded dust generated during remodeling or painting. Lead dust from remodeling or deteriorated paint lands on the floor near where children play and can be ingested.

4. Asbestos
At first glance, asbestos appears to be a construction worker’s confidant. It is a versatile mineral fiber that excels at absorption and can withstand the harshness of heat. But when floor tiles or roof shingles need to be repaired or replaced, asbestos morphs into a homeowner’s headache. Those same strong fibers that drive a building’s start can turn nasty during remodeling or demolition stages. Inhaling the toxic particles in that state causes asbestosis — a condition instigated by fibrosis in the lungs, sparking chest pain, shortness of breath, nail abnormalities, clubbing of fingers and other complications. With those factors in mind, the EPA issued a ruling on July 12, 1989, banning most asbestos-containing products. But two years later, the Fifth Circuit Court of Appeals in New Orleans overturned that decision, leaving only some products on the banned list: flooring felt, rollboard and corrugated, commercial and specialty paper. When a substance makes its way into the federal government’s Agency for Toxic Substances & Disease Registry, something was wrong to begin with.

Chrysotile asbestos, like all other forms of asbestos, has produced tumors in animals. Mesotheliomas have been observed in people who were occupationally exposed to chrysotile, family members of the occupationally exposed, and residents who lived close to asbestos factories and mines. Asbestos-related diseases

Asbestos exposure becomes a health concern when high concentrations of asbestos fibers are inhaled over a long time period. People who become ill from inhaling asbestos are often those who are exposed on a day-to-day basis in a job where they worked directly with the material. As a person’s exposure to fibers increases, because of being exposed to higher concentrations of fibers and/or by being exposed for a longer time, then that person’s risk of disease also increases. Disease is very unlikely to result from a single, high-level exposure, or from a short period of exposure to lower levels. Smoking combined with asbestos exposure may increase the health risk dramatically.

Other asbestos-related diseases

Asbestos warts: caused when the sharp fibers lodge in the skin and are overgrown causing benign callus-like growths.

Pleural plaques: discrete fibrous or partially calcified thickened area which can be seen on X-rays of individuals exposed to asbestos. Although pleural plaques are themselves asymptomatic, in some patients this develops into pleural thickening.

Diffuse pleural thickening: similar to above and can sometimes be associated with asbestosis. Usually no symptoms shown but if exposure is extensive, it can cause lung impairment.

5. Olestra

When it comes to nutrition, what better equation could there be than zero calories, zero grams of cholesterol and zero grams of fat? In January 1996, the FDA approved olestra as a food additive. Cut out the unhealthy cooking oil. Shred the package of shortening. Bury the stick of butter. Frito-Lay was among the first companies to jump on board, introducing its WOW! division of potato chips in 1998 to claim fat-free stomach satisfaction. But olestra proved to be a greedy chemical. It not only removed unwanted fat from foods but also negated the body’s ability to absorb essential vitamins. Side effects included cramps, gas and loose bowels, turning fat-free French fries into a foiled business fad. The FDA has kept olestra as a legal food additive to this day, though, leaving its health implications in the hands of individual consumers.

Olestra (also known by its brand name Olean) is a fat substitute that adds no fat, calories, or cholesterol to products. It has been used in the preparation of traditionally high-fat foods such as potato chips, thereby lowering or eliminating their fat content.

Olestra was approved by the Food and Drug Administration for use as a food additive in 1996 and was initially used in potato chips under the WOW brand by Frito Lay. In 1998, which was the first year Olestra products were marketed nationally after the FDA’s Food Advisory Committee confirmed a judgment it made 2 years earlier, sales were over $400 million. However, by 2000 sales slowed to $200 million, largely caused by the unappealing side effects described on the FDA-mandated health warning label “This Product Contains Olestra. Olestra may cause abdominal cramping and loose stools. Olestra inhibits the absorption of some vitamins and other nutrients. Vitamins A, D, E, and K have been added.”

This condition (normally occurring only by excessive consumption in a short period of time) led to a condition known as “steatorrhea”, which can be embarrassing. Sales were so slow that P&G
gave up on attempts to widen the uses of Olestra, and even sold off their Cincinnati-based Olestra factory to Twin Rivers Technologies in February 2002.

The FDA removed the warning requirement in 2003 as it had "conducted a scientific review of several post-market studies submitted by P&G, as well as adverse event reports submitted by P&G and the Center for Science in the Public Interest (a particularly outspoken critic). The FDA concluded that the label statement was no longer warranted", in spite of having received over 20,000 complaints. When removing the Olestra warning label, the FDA cited a 6-week Procter & Gamble (makers of Olestra) study of more than 3000 people showing that an Olestra-eating group experienced only a small increase in bowel movement frequency.

P&G also worked hard in its publicity campaigns to highlight the positives of the additive, even working directly with the health-care community. But, outside of the popular culture disapproval of the product, many consumers simply did not see the speedy results for which they had hoped from a product they saw as being a cure-all. This was because Olestra only addressed the fat component of the overall dietary pattern of Americans. Foods containing olestra do not contain calories from fats and many Americans believed that they could just eat more of them to compensate for the fat calories "saved". Eating olestra chips was not a particularly effective way to improve one's diet overall.

Olestra is banned in many countries, including the United Kingdom and Canada

6. Fluoride (Water Fluoridation)

"In summary, we hold that fluoridation is an unreasonable risk." - US ENVIRONMENTAL PROTECTION AGENCY HEADQUARTERS' UNION, 2001.

"Over the past ten years a large body of peer-reviewed science has raised concerns that fluoride may present unreasonable health risks, particularly among children, at levels routinely added to tap water in American cities." - ENVIRONMENTAL WORKING GROUP, July 2005

"I am quite convinced that water fluoridation, in a not-too-distant future, will be consigned to medical history." - Dr. ARVID CARLSSON, Winner, Nobel Prize for Medicine (2000).

**Water fluoridation** is the controlled addition of fluoride to a public water supply to allegedly reduce tooth decay. Fluoridated water has fluoride at a level that is effective for preventing cavities; this can occur naturally or by adding fluoride. Fluoridated water operates on tooth surfaces: in the mouth it creates low levels of fluoride in saliva, which reduces the rate at which tooth enamel demineralizes and increases the rate at which it remineralizes in the early stages of cavities. Typically a fluoridated compound is added to drinking water, a process that in the U.S. costs an average of about $0.94 per person-year. Defluoridation is needed when the naturally occurring fluoride level exceeds recommended limits. A 1994 World Health Organization expert committee suggested a level of fluoride from 0.5 to 1.0 mg/L (milligrams per liter), depending on climate. Bottled water typically has unknown fluoride levels, and some domestic water filters remove some or all fluoride

7. Agent Orange
A potent herbicide used from 1961 to 1971 in the Vietnam War, Agent Orange was designed to cut through Vietnam’s thick canopy of foliage to reveal enemy troops beneath. While it succeeded, the price was high: exposure proved deadly to humans, causing cancers, birth defects and a slew of other disorders. Some 21 million gallons of it were dumped on Vietnam, resulting in hundreds of thousands of injuries and birth defects to Vietnamese citizens. U.S. veterans faced exposure too; they received a $180 million settlement from its manufacturers in 1984.

According to Vietnamese Ministry of Foreign Affairs, 4.8 million Vietnamese people were exposed to Agent Orange, resulting in 400,000 deaths and disabilities, and 500,000 children born with birth defects. The most affected zones are the mountainous area along Truong Son (Long Mountains) and the border between Vietnam and Cambodia. The affected residents are living in sub-standard conditions with many genetic diseases.

The use of Agent Orange still has an effect on the citizens of Vietnam, poisoning their food chain and creating concern about its effect on human beings. This chemical has been reported to cause serious skin diseases as well as a vast variety of cancers in the lungs, larynx, and prostate. Children in the areas where Agent Orange was used have been affected and have multiple health problems including cleft palate, mental disabilities, hernias, and extra fingers and toes.

Presently the Veterans Administration provides compensation and treatment for several diseases to former military service personnel who were exposed to Agent Orange.
8. Depleted Uranium

Depleted uranium (DU) is uranium primarily composed of the isotope uranium-238 (U-238). Natural uranium is about 99.27 percent U-238, 0.72 percent U-235, and 0.0055 percent U-234. U-235 is used for fission in nuclear reactors and nuclear weapons.

DU is useful because of its very high density of 19.1 g/cm. Civilian uses include counterweights in aircraft, radiation shielding in medical radiation therapy and industrial radiography equipment, and containers used to transport radioactive materials. Military uses include defensive armor plating and armor-piercing projectiles.

The use of DU in munitions is controversial because of questions about potential long-term health effects. Normal functioning of the kidney, brain, liver, heart, and numerous other systems can be affected by uranium exposure, because in addition to being weakly radioactive, uranium is a toxic metal. It is weakly radioactive and remains so because of its long physical half-life (4.468 billion years for uranium-238), but has a considerably shorter biological half-life. The aerosol produced during impact and combustion of depleted uranium munitions can potentially contaminate wide areas around the impact sites or can be inhaled by civilians and military personnel. During a three week period of conflict in 2003 in Iraq, 1,000 to 2,000 tons of DU munitions were used, mostly in cities.
9. **CFCs**

Short for chlorofluorocarbons, CFCs are nasty chemical compounds that wreak havoc on the environment. Used in refrigeration units and aerosol cans, CFCs combine with atmospheric ozone, neutralizing the molecular compound and weakening the ozone layer, an important environmental barrier that protects the earth’s surface from ultraviolet radiation from the sun. While increased regulation since the 1970s has diminished their use, CFCs can endure in the atmosphere for nearly a century, making this a very long-lived mistake.

According to their Material Safety Data Sheets, CFCs and HCFCs are colourless, volatile, relatively non-toxic liquids and gases with a faintly sweet ethereal odour. Overexposure may cause dizziness, loss of concentration, Central Nervous System depression and/or cardiac arrhythmia. Vapors displace air and can cause asphyxiation in confined spaces. Although non-flammable, their combustion products include hydrofluoric acid, phosgene, and related species.

10. **Plastic Grocery Bags**

Touted as a convenient and cheap alternative to paper bags, plastic grocery bags gained acceptance in the late 1970s and now meet 80% of retailers’ bagging needs. They’ve saved millions of trees but come with equally bad consequences: more than 500 million are used and discarded each year, millions of which never make it to a landfill and fall as litter. And depending on the plastic used in production, those bags may take several hundred years to decompose. The solution? Recycle, or better yet, skip both paper and plastic and bring a reusable bag of your own.

11. **Cigarettes**
The earliest forms of cigarettes have been attested in Central America around the 9th century in the form of reeds and smoking tubes. The Maya, and later the Aztecs, smoked tobacco and various psychoactive drugs in religious rituals and frequently depicted priests and deities smoking on pottery and temple engravings. The cigarette, and the cigar, were the most common method of smoking in the Caribbean, Mexico and Central and South America until recent times.

The South and Central American cigarette used various plant wrappers; when it was brought back to Spain, maize wrappers were introduced, and by the seventeenth century, fine paper. The resulting product was called papelate and is documented in Goya’s paintings La Cometa, La Merienda en el Manzanares, and El juego de la pelota a pala (18th century).

Nicotine, the primary psychoactive chemical in cigarettes, is addictive. Cigarette use by pregnant women has also been shown to cause birth defects (which include mental and physical disability). On average, each cigarette smoked shortens lifespan by 11 minutes and half of smokers die early of tobacco-related disease and lose, on average, 14 years of life.

The list of 599 additives approved by the US Government for use in the manufacture of cigarettes is something every smoker should see. Submitted by the five major American cigarette companies to the Dept. of Health and Human Services in April of 1994, this list of ingredients had long been kept a secret.

Tobacco companies reporting this information were:
- American Tobacco Company
- Brown and Williamson
- Liggett Group, Inc.
- Philip Morris Inc.
- R.J. Reynolds Tobacco Company

While these ingredients are approved as additives for foods, they were not tested by burning them, and it is the burning of many of these substances which changes their properties, often for the worse. Over 4000 chemical compounds are created by burning a cigarette, many of which are toxic and/or carcinogenic. Carbon monoxide, nitrogen oxides, hydrogen cyanide and ammonia are all present in cigarette smoke. Forty-three known carcinogens are in mainstream smoke, sidestream smoke, or both.

It's chilling to think about not only how smokers poison themselves, but what others are exposed to by breathing in the secondhand smoke. The next time you're missing your old buddy, the cigarette, take a good long look at this list and see them for what they are: a delivery system for toxic chemicals and carcinogens.

Cigarettes offer people only a multitude of smoking-related diseases and ultimately death.

The List of 599 Additives in Cigarettes is primarily:
- Acetanisole
- Acetic Acid
- Acetoin
- Acetophenone
- 6-Acetoxydihydrotheaspirane
- 2-Acetyl-3-Ethlypyrazine
- 2-Acetyl-5-Methylfuran
- Acetylpyrazine
- 2-Acetylpyridine
- 3-Acetylpyridine
- 2-Acetylthiazole
- Aconitic Acid
- di-Alanine
- Alfalfa Extract
- Allspice Extract, Oleoresin, and Oil
- Allyl Hexanoate
- Allyl Ionone
- Almond Bitter Oil
- Ambergris Tincture
- Ammonia
- Ammonium Bicarbonate
- Ammonium Hydroxide
- Ammonium Phosphate Dibasic
- Ammonium Sulfide
- Amyl Alcohol
- Amyl Butyrate
12. Aspartame

Aspartame (or APM) is the name for an artificial, non-saccharide sweetener used as a sugar substitute in many foods and beverages. In the European Union, it is known under the E number (additive code) E951. Aspartame is the methyl ester of a phenylalanine/aspartic acid dipeptide. Aspartame was first synthesized in 1965. Its use in food products was first approved by the United States Food and Drug Administration in 1974. Because its breakdown products include phenylalanine, aspartame is among the many substances that must be avoided by people with phenylketonuria (PKU), a rare genetic condition.

The safety of aspartame has been the subject of several political and medical controversies, Congressional Hearings and internet hoaxes since its initial approval by the U.S. Food and Drug Administration (FDA) in 1974.

You need to read your labels, these may well be in more products than you suspect. If you take vitamins, remember to check those as well. Check anything that is consumable!

- Aspartame
- Acesulfame-k
- Low Calorie
- Low Sugar
- No Calories
- Saccharin
- Sugar Free
The following is a brief list, compiled by the author, of products containing the artificial sweetener Aspartame. This list will be periodically updated and user submissions are welcomed, just leave a comment, these will be added to the list then when verified.

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diet Coca Cola (all varieties)</td>
<td>Soft Drink</td>
</tr>
<tr>
<td>Coca Cola Zero (all varieties)</td>
<td></td>
</tr>
<tr>
<td>Diet Pepsi (all varieties)</td>
<td></td>
</tr>
<tr>
<td>Pepsi Max (all varieties)</td>
<td></td>
</tr>
<tr>
<td>Diet Irn Bru (all varieties)</td>
<td></td>
</tr>
<tr>
<td>Lilt Zero (all varieties)</td>
<td></td>
</tr>
<tr>
<td>Sprite Zero (all varieties)</td>
<td></td>
</tr>
<tr>
<td>Tango (all varieties)</td>
<td></td>
</tr>
<tr>
<td>Tango no added sugar (all varieties)</td>
<td></td>
</tr>
<tr>
<td>7up Free (all varieties)</td>
<td></td>
</tr>
<tr>
<td>Lucozade Sport (all varieties)</td>
<td></td>
</tr>
<tr>
<td>Schweppes Slimline Drinks (all varieties)</td>
<td></td>
</tr>
<tr>
<td>Fanta Zero (all varieties)</td>
<td></td>
</tr>
<tr>
<td>Fanta Orange</td>
<td></td>
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<tr>
<td>Dr Pepper Zero</td>
<td></td>
</tr>
<tr>
<td>Oasis Summer Fruits Extra Light</td>
<td></td>
</tr>
<tr>
<td>Oasis Citrus Punch</td>
<td></td>
</tr>
<tr>
<td>Ribena Really light (all varieties)</td>
<td></td>
</tr>
<tr>
<td>Robinsons Orange Squash</td>
<td>Cordial</td>
</tr>
<tr>
<td>Robinson's No added sugar range</td>
<td></td>
</tr>
<tr>
<td>Muller Light Cherry</td>
<td>Yoghurt</td>
</tr>
<tr>
<td>Muller Light Blueberry</td>
<td></td>
</tr>
<tr>
<td>Muller Light Raspberry</td>
<td></td>
</tr>
<tr>
<td>Muller Light Banana and Custard</td>
<td></td>
</tr>
<tr>
<td>Danone Activia Cherry</td>
<td></td>
</tr>
<tr>
<td>Weight Watchers Fromage Frais</td>
<td></td>
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<tr>
<td>Weight Watchers Toffee and Vanilla</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wrigleys Airwaves (all varieties)</td>
<td>Chewing Gum</td>
</tr>
<tr>
<td>Wrigleys Orbit (all varieties)</td>
<td></td>
</tr>
<tr>
<td>Wrigleys Extra (all varieties)</td>
<td></td>
</tr>
<tr>
<td>Uncle Ben's Sweet and Sour Light</td>
<td>Cooking Sauce</td>
</tr>
<tr>
<td>Walkers Sensations Sweet Thai Chilli</td>
<td></td>
</tr>
<tr>
<td>Walkers Sensations Lime and Thai Spices</td>
<td></td>
</tr>
<tr>
<td>Walkers Prawn Cocktail</td>
<td>Crisps</td>
</tr>
<tr>
<td>Canderel</td>
<td></td>
</tr>
<tr>
<td>Silver Spoon Sweetness and Light</td>
<td>Tabletop Sweeteners</td>
</tr>
<tr>
<td>Silver Spoon Light Granulated Sugar</td>
<td></td>
</tr>
<tr>
<td>Cadburys Highlights (all varieties)</td>
<td></td>
</tr>
<tr>
<td>Options Hot Chocolate Drink (all varieties)</td>
<td></td>
</tr>
</tbody>
</table>

13. PCB's
Polychlorinated biphenyls (PCBs) are a class of organic compounds with 1 to 10 chlorine atoms attached to biphenyl, which is a molecule composed of two benzene rings. PCBs were widely used for many applications, especially as dielectric fluids in transformers, capacitors, and coolants. Due to PCB’s toxicity and classification as a persistent organic pollutant, PCB production was banned by the United States Congress in 1979 and by the Stockholm Convention on Persistent Organic Pollutants in 2001.

Alternative names
Commercial PCB mixtures were marketed under the following names:

<table>
<thead>
<tr>
<th>Country</th>
<th>Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil</td>
<td>Ascarel</td>
</tr>
<tr>
<td>Former Czechoslovakia</td>
<td>Delor</td>
</tr>
<tr>
<td>France</td>
<td>Phenoclor</td>
</tr>
<tr>
<td></td>
<td>Pyrâlée (both used by Prodelec)</td>
</tr>
<tr>
<td>Germany</td>
<td>Clophen (used by Bayer)</td>
</tr>
<tr>
<td>Italy</td>
<td></td>
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</tbody>
</table>

History
PCBs, originally termed “chlorinated diphenyls,” were commercially produced as complex mixtures containing multiple isomers at different degrees of chlorination. In the United States, commercial production of PCBs was taken over in 1929 by Monsanto Company from Swann Chemical Company. Manufacturing levels increased in response to the electrical industry’s need for a “safer” (than flammable mineral oil) cooling and insulating fluid for industrial transformers and capacitors. PCBs were also commonly used as stabilizing additives in the manufacture of flexible PVC coatings for electrical wiring and electronic components to enhance the heat and fire resistance of the PVC.

The toxicity associated with PCBs and other chlorinated hydrocarbons, including polychlorinated naphthalenes was recognized very early due to a variety of industrial incidents. A conference about the hazards was organized at Harvard School of Public Health in 1937, and a number of publications referring to the toxicity of various chlorinated hydrocarbons were published before 1940. Robert Brown reminded chemists in 1947 that Aroclors were “objectionably toxic. Thus the maximum permissible concentration for an 8-hr. day is 1 mg/m3 of air. They also produce a serious and disfiguring dermatitis”. However, PCB manufacture and use continued with few restraints until the 1970s.

PCBs are persistent organic pollutants and have entered the environment through both use and disposal. The environmental transport of PCBs is complex and nearly global in scale. The public, legal, and scientific concerns about PCBs arose from research indicating they were likely carcinogens having the potential to adversely impact the environment and therefore undesirable as commercial products. Despite active research spanning five decades, extensive regulatory actions, and an effective ban on their production since the 1970s, PCBs still persist in the environment and remain a focus of attention.

The only North American producer, Monsanto Company, marketed PCBs under the trade name Aroclor from 1930 to 1977. These were sold under trade names followed by a 4 digit number. The first two digits generally refer to the number of carbon atoms in the biphenyl skeleton (for PCBs this is 12), the second two numbers indicate the percentage of chlorine by mass in the mixture. Thus, Aroclor 1260 has 12 carbon atoms and contains 60% chlorine by mass. An exception is Aroclor 1016, which also has 12 carbon atoms, but has 42% chlorine by mass. Different Aroclors were used at different times and for different applications. In electrical equipment manufacturing in the USA, Aroclor 1260 and Aroclor 1254 were the main mixtures used before 1950. Aroclor 1242 was the main mixture used in the 1950s and 1960s until it was phased out in 1971 and replaced by Aroclor 1016.

Manufacture peaked in the 1960s, by which time the electrical industry had lobbyed the U.S. Congress to make them mandatory safety equipment. In 1966, they were determined by Swedish chemist Dr. Soren Jensen to be an environmental contaminant, and it was Dr. Jensen, according to a 1994 article in Sierra, who named them PCBs. Previously, they had simply been called “phenols” or referred to by various trade names, such as Aroclor, Kennechlor, Pyrenol, Chlorinol and others.

Their commercial utility was based largely on their chemical stability, including low flammability, and desirable physical properties, including electrical insulating properties. Their chemical and physical stability has also been responsible for their continuing persistence in the environment, and the lingering interest decades after regulations were imposed to control environmental contamination.

In 1972, PCB production plants existed in Austria, the then Federal Republic of Germany, France, Great Britain, Italy, Japan, Spain, USSR, and USA.

In 1973 the use of PCBs was banned in “open” or “dissipative” sources, such as:
- plasticisers in paints and cements
- casting agents
- fire retardant fabric treatments and heat stabilizing additives for PVC electrical insulation
- adhesives
- paints and water-proofing
- railway sleepers

However, they continued to be allowed in “totally enclosed uses” such as transformers and capacitors, which, in certain failure modes or out-of-specification conditions, can leak, catch fire, or explode. It was Ward B. Stone of the New York State Department of Environmental Conservation (NYDEC) who first published his findings in the early 1970s that PCBs were leaking from transformers and had contaminated the soil at the bottom of utility poles. Concern over the toxicity and persistence (chemical stability) of PCBs in the environment led the United States Congress to ban their domestic production in 1979, although some use continues in closed systems such as capacitors and transformers.

“Enclosed uses” of PCBs include:
- capacitors
- insulating fluids in transformers
- vacuum pump fluids
- hydraulic fluids
In the UK, closed uses of PCBs in new equipment were banned in 1981, when nearly all UK PCB synthesis ceased, but closed uses in existing equipment containing in excess of 5 litres of PCBs were not stopped until December 2000.

In Japan, PCBs were first produced by Kanegafuchi Chemical Co. Ltd. (Kaneka) in 1954 and production continued until 1972 when the Japanese government banned the production, use, and import of PCBs.

Estimates have put the total global production of PCBs on the order of 1.5 million tons. The United States was the single largest producer with over 600,000 tons produced between 1930 and 1977. The European region follows with nearly 450,000 tons through 1984. It is unlikely that a full inventory of global PCB production will ever be accurately tallied, as there were factories in Poland, East Germany, and Austria that produced unknown amounts of PCBs.

Homotoxycology

The body is made to absorb nutrients and excrete refuse. The body needs to detox. We get exposed to toxic substances every minute of every day. There is dirt in the air we breathe, dirt in the food we eat, dirt in the words we hear, dirt in the things we see. Our body needs to detox and flush out this dirt. These are exo-toxins. As we live we breakdown cells that grow old or are damaged, we make toxic byproducts as we process nutrients, and we need to excrete these auto-toxins. Everybody has a toilet to urinate and defecate in, everybody exhales, everybody sweats, everybody detoxes. We must detox. But if one of our detox processes gets excessive the allopathic medical doctor sees this as a symptom.

Our major detox processes are bowel stool, urine, sweat, exhale, skin, hair, mucous, menses, among others. We live in an over toxic world. The toxins in our world are getting greater every day. The petro-chemical companies are dumping toxins like never before. The oceans have become a toxic sewer; all of the water supplies all over the earth are now toxic. The air is polluted everywhere even at the poles. We are exposed to toxins every second.

You might be exposed to a large amount of cadmium, uranium, cesium, chemical solvent, or one of a thousand toxic substances in our environment. Your body will be trying to detox. This detox might be stubborn and the body will be trying to detox. So your body has excess detox.

But what if you are so unlucky, so misfortunate, so ill-fated, so wretchedly miserable star crossed luckless, that you go to an Allopath for help?

The allopathic medical doctor sees this as a symptom. He is trained to treat all symptoms. So he prescribes Imodium for diarrhea, not thinking that the diarrhea might be a good way for the body to detox something. He prescribes Ditropan, Robinul, Probanthine for excessive sweating, not thinking that the sweat might be trying to detox the body. He prescribes demeclocycline for excessive urination, not thinking that the body might be trying to get rid of something. He prescribes cortisone cream for skin irritations not thinking that the skin might be trying to get rid of a toxic substance. If there is excess menses he prescribes tranexamic acid and aminocaproic acid, not caring if the body is detoxing or not. If you have a fever and are trying to detox a virus or fungus, he will prescribe an anti-pyretic, not caring that your body might be trying to burn up toxins. If you have excess mucous or sinus drip, he will prescribe an anti-histamine, not thinking for a minute that maybe your body wants to get rid of something. You see he has a pill for every symptom.

A young girl was visiting us and mentioned that she was on her way to see a medical doctor. I casually asked why. She said she sweats too much and he is going to give her a botox shot into the underarm to stop the sweating. I said, well your 17 yr old about to take your high school final exams, you have two boyfriends that don’t know about each other, and you eat salted pig for every meal. So sweating is natural and healthy. Stop the pig and salt, choose a boyfriend and study. If you went to the medical doctor with diarrhea, would he sew up your ass? Does he care about your long term health or just your presented symptom? You see the mind of the Allopath.
So when we suppress detox the toxins must be driven back into the body. Perhaps you can remember a time where you felt the need to have a stool very bad. You had the urge to go take a shit (pardon), but you were busy doing something else. You were on the golf course with no toilet in sight, you were in class and could not break, you were on a long bus ride without a toilet, or some other such event. You hold it and fight the urge. The urge passes. Hours Later when the toilet is available you no longer have the urge. Something has stopped the urge, and you can no longer go. Well what happened to the stool? Did it miraculously disappear? No your body reabsorbed it. Your body took those toxins and reabsorbed them and then transferred them to another area. It might put these toxins into fat cells. This is the cause of cellulite. Teachers or anyone who fights the urge can get cellulite. This is when toxins get sequestered into cells or between cells.

So this is the medical science of Homotoxocology. The body is detoxing and when we block the detox the toxins are pushed into the body where the body has to deal with them. This can cause or aggravate all diseases. The Reckeweg brothers were doctors who coined the term Homotoxocology. They charted out the process and they developed homeopathy to deal with these problems. I worked with the Reckeweg brothers and I developed Reckeweg formulas for the detox. The original books on homotoxocology are very good reading. The oldest brother was quite upset by sue-toxins or pig toxins. He said that since the pig does not have a proper set of sweat glands and toxins build up in his tissues. There is a toxic release mechanism in the top of the pig’s foot but still the pig meat has too many toxins. This is perhaps why the Bible says “do not eat Pork”.

Don’t Eat Pork every day. It has too many toxins. Save it for once or twice a year.
I developed an electrical technology of the QXCI to find the toxic areas of tissue and the level of toxicity. An electrical form of the science of Homotoxicology. The chart below is an example.

On the top in blue we see the levels of toxicity. First the simple excretion phase, the normal detox of the body. Second an overreaction or excess detox, this produces a symptom. Third then if the toxins are driven back into the body by a dim witted allopath, the toxins go into the interstitial spaces around the cells. Fourth the body impregnates the toxins into the cells, like in the case of liver spots. As the liver gets old or weary and detox is compromised toxins can be put into a liver spot, called so because it comes when the liver is tired of detox. Fifth if the body still can't detox, or if the toxins are driven back into the body by a dim witted allopath, the body makes bad cells and these bad cells are degenerate. Degeneration diseases like arthritis can result. And sixth or lastly the body's final detox is cancer. The last way for the body to detox. The list in yellow is where tissues where the toxins can be to produce disease. So the homotoxicology deals with the bodies ability to shuffle toxins in an attempt to detox. The sinuses are detoxifiers of the pituitary. The skin is a detox for the thyroid. The lungs for the adrenal. Menses for the female system. You see the body is made with clever ways to detox, lots of back-up systems. All aggravated by suppressive allopathy.

There was once a young girl with a persistent cough in my medical nutrition class in Denver. I was lecturing on Calcium. Calcium is need for muscle action. And if you get deficient in calcium you might get tetany.

Here is the lecture on Tetany:

<table>
<thead>
<tr>
<th>Tetanus</th>
<th>Calcium deficit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tetanus bacteria has an endotoxin that blocks calcium and cause tetany. The medical test or sign of extreme calcium deficiency is to tap on the parathyroid nerve in the neck. If this produces tetany and spasm of the muscles of the face then there is tetany. Extreme calcium deficiency of over 50%. This is why tetanus bacteria is called lockjaw. It works on the face first often. When you get slightly deficient of 20% the smallest muscle of the body locks up. This is the cilia muscle in the lungs. There are millions of small hairs or cilia on the lung wall. The muscle attached of neuronal membranes to sodium ions, causing a progressive depolarization. This increases the ease with which action potentials can be initiated. If the plasma Ca2+ decreases to less than 50% of the normal value of 9.4mg/dl; action potentials may be spontaneously generated, causing contraction of peripheral skeletal muscle.</td>
<td>It works on the face first often. When you get slightly deficient of 20% the smallest muscle of the body locks up. This is the cilia muscle in the lungs. There are millions of small hairs or cilia on the lung wall. The muscle attached of neuronal membranes to sodium ions, causing a progressive depolarization. This increases the ease with which action potentials can be initiated. If the plasma Ca2+ decreases to less than 50% of the normal value of 9.4mg/dl; action potentials may be spontaneously generated, causing contraction of peripheral skeletal muscle.</td>
</tr>
</tbody>
</table>
to them use organized motion to sweep the lung clear. We inhale over 25 lbs of dirt a year and without the cilia muscles and process we would develop lung problems.

The girl had the persistent cough and I said let’s try simple calcium. I gave her two simple pills of a natural calcium lactate. And one hour later she coughed up a small piece of potato chip. She remembered that 2 days ago she was watching a horror show and aspirated a small piece of potato chip. Her body was trying to get rid of it. Her cough then went away. Her cough was merely an alarm reaction to the presence of a toxin.

But what if she was so unlucky, so misfortunate, so ill-fated, so wretchedly miserable star crossed luckless, that she would have went to an Allopath for help?

The allopath would have prescribed a cough suppressant for her cough. The cough would go away and she would adapt to the presence of the chip. The body would try to detox in another way. Her body would surround the chip with a cyst. And try to remove it but as each symptom is suppressed the body will try to make the degenerative cyst grow bigger for easier detox. Then with the addition of another toxin like smoke the cyst could grow cancerous. The final process of the detox. What is the cause of the cancer? Well mindless Allopathy cause millions of cases of cancer each year. When we suppress the symptoms we get problems.

**Reckeweg’s Homotoxicology Table of Human Adaptation to Toxics**

We must first be able to detox then we can get proper nutrition. We cannot enjoy the in breath if we cannot get out the out breath. If we have not urinated in a week we can’t enjoy the juice. If we have not had a good bowel movement in a week we can enjoy dinner. We live in a toxic world where detox must be part of our lives.

**Hormesis** (from Greek ὑρμησίς “rapid motion, eagerness,” from ancient Greek hormáein “to set in motion, impel, urge on”) is the term for generally-favorable biological responses to low exposures to toxins and other stressors. A pollutant or toxin showing hormesis thus has the opposite effect in small doses as in large doses. A related concept is Mithridatism, which refers to the willful exposure to toxins in an attempt to develop immunity against them.

In toxicology, hormesis is a dose response phenomenon characterized by a low dose stimulation, high dose inhibition, resulting in either a J-shaped or an inverted U-shaped dose response. Such environmental factors that would seem to produce positive responses have also been termed “eustress.”
The six phase table is a field matrix reflecting medical experience based on careful observation and empirical learning. It is a phase-by-phase arrangement of disorders with no direct relationship between them. No causal psychogenetic link between disorders can be inferred. The structures of the table makes it suitable for developing a prediction system giving a better assessment of the possibilities for a vicarious effect.

*Phase nomenclature in psychology.
Radiation hormesis hypothesis compared with LNT and linear model with threshold. In all 3 graphs, x-axes represent radiation dose and y-axes represent magnitude of health effect. Zero-equivalent point (ZEP) represents level of health effect in absence of radiation. The quadratic model of Figure 1 approximates threshold graph of this figure. A threshold model would imply no effects of radiation up to certain level, after which risk rises linearly with dose. The radiation hormesis model, in contrast, shows beneficial effect at low levels of exposure as it drops below ZEP.
Large-scale environmental contamination events

United States, Massachusetts

Pittsfield is one of GE’s hometowns. Pittsfield was home to GE’s transformer and capacitor divisions, and electrical generating equipment built and repaired in Pittsfield powered the electrical utility grid throughout the nation.

PCB-contaminated oil routinely migrated from GE’s 250-acre industrial plant located in the very center of the city to the surrounding groundwater, nearby Silver Lake, and to the Housatonic River, which flows through Massachusetts to Connecticut on down to the Long Island Sound. Faced with ever-mounting amounts of PCB-contaminated material, and with a growing need to dispose of this material, GE and its contractors hauled and dumped PCB-contaminated material anywhere they could. They still had too much. So GE in the 1940s and 50s launched a giveaway program. GE employees and their neighbors and local contractors, in return for signing a letter stating that they were receiving clean fill and that they would not hold GE liable for any subsequent problems, were given truckloads of PCB-contaminated material to use as fill in their backyards and construction projects.

The sheer magnitude and varied scope of this contamination has made the Pittsfield/Housatonic Site one of America’s most complicated PCB sites.

New York State

Between approximately 1947 and 1977 General Electric Company (GE) released up to 1,300,000 pounds (590,000 kg) of PCBs into the Hudson River. The PCBs came from the company’s two capacitor manufacturing plants at Hudson Falls and Fort Edward in New York State.

In 1976, because of concern over continuing high levels of PCBs in local fish and other aquatic organisms, and the unacceptable risk to the health of consumers of such fish, the NYSDEC banned all fishing in the Upper Hudson River, as well as commercial fishing of striped bass and several other species in the Lower Hudson River, and also issued advisories restricting the consumption of fish caught within a 20-mile (30 km) long segment of the Hudson River from Hudson Falls to Troy. There have been many programs of remediation work to reduce the PCB pollution. In 1984, approximately 200 miles (320 km) of the Hudson River was designated a Superfund site, and attempts to cleanup the Upper Hudson River began, including the removal in 1977-8 of 189,000 cubic yards (140,000 m³) of contaminated river sediments near Fort Edward. In 1991, further PCB pollution was found at Bakers Falls near the former GE Hudson Falls factory, and a program of remediation was started. In August 1995, a 40-mile (64 km) reach of the Upper Hudson was re-opened to fishing but only on a catch-and-release basis. Removal of contaminated soil from Rogers Island was completed in December 1999. In 2002, the EPA announced a further 2,650,000 cubic yards (2,030,000 m³) of contaminated sediments in the Upper Hudson River would be removed.

Indiana

From the late 1950s through 1977, Westinghouse Electric used PCBs in the manufacture of capacitors in its Bloomington, Indiana plant. Reject capacitors were hauled and dumped in area salvage yards and landfills, including Bennett’s Dump, Neaf’s Landfill and Lemon Lane Landfill. Workers also dumped PCB oil down factory drains which contaminated the city sewage treatment plant. The City of Bloomington gave away the sludge to area farmers and gardeners, creating anywhere from 200 to 2000 sites which remain unaddressed. Over 2 million pounds of PCBs were estimated to have been dumped in Monroe and Owen Counties.[citation needed] Although federal and state authorities have been working on the sites’ environmental remediation, many areas remain contaminated. Concerns have been raised regarding the removal of PCBs from the karst limestone topography, and regarding the possible disposal options.

To date, the Westinghouse Bloomington PCB Superfund site case does not have a RI/FS (Remedial Investigation/Feasibility Study) and ROD (Record of Decision), although Westinghouse signed a US Department of Justice Consent Decree in 1985. The 1985 Consent Decree required Westinghouse to construct an incinerator that would incinerate PCB-contaminated materials. However, due to public opposition to the incinerator, the State of Indiana passed a number of laws that delayed and blocked the construction of the incinerator. Consent Decree parties began to explore alternative remedies in 1994 for six of the main PCB contaminated sites.

On February 15, 2008, Monroe County approved a plan to clean up the 3 remaining contaminated sites in the City of Bloomington, at a cost of $9.6m to CBS Corp., the successor of Westinghouse.

The Great Lakes

Much of the Great Lakes area is still heavily polluted with PCBs, despite extensive remediation work. Locally caught fresh water fish and shellfish are contaminated with PCBs and their consumption is restricted.

From 1959 to 1971, Waukegan Harbor in Illinois on Lake Michigan was contaminated with PCBs discharged by the Outboard Marine Corp.

Alabama

PCBs (manufactured through most of the 20th century) originating from Monsanto Chemical Company in Anniston, Alabama leaked into Snow creek, then Choccolocco Creek, then Logan Martin Lake. In the early 2000s, class action lawsuits (led, in at least one case, by the late Johnnie Cochran) were settled by local land owners, including those on Logan Martin Lake, and Lay Reservoir (downstream on the Coosa River), for the PCB pollution.

Today, the highest pollution levels remain concentrated in Snow and Choccolocco Creeks. Concentrations in fish have and continue to decline over time, however, sediment disturbance can resuspend the PCBs from the sediment back into the water column and food web.

Belgium

In 1999, the Dioxine affair caused serious trouble for the Belgian government when PCBs were found in chicken and eggs.

Czechoslovakia

The chemical plant Chemko in Strážske (east Slovakia) was an important producer of polychlorinated biphenyls for the former communist block (Comecon) until 1984. Chemko contaminated a large part of east Slovakia, especially the sediments of the Laborec river and reservoir Zemplínska šírava.

Republic of Ireland

Main article: 2008 Irish pork crisis

In December 2008 a number of Irish news sources reported that testing had revealed “extremely high” levels of PCBs in pork products, ranging from 80 to 200 times the EU’s upper safe limit of 1.5
In eukaryotes, PCBs may be oxidized by mixed function oxidase enzyme. Dioxygenase enzyme.

In biosphere, PCBs can be degraded by either bacteria or eukaryotes, but the speed of the reaction depends on both the number and the disposition of chlorine atoms in the molecule: less substituted, primary source of PCB contamination in the atmosphere.

In the atmosphere, PCBs may be degraded by hydroxyl radical, or directly by photolysis of carbon. Atmospheric concentrations of PCBs tend to be lowest in rural areas, where they are typically in the picogram per cubic meter range, higher in suburban and urban areas, and highest in city centres, where they can reach 1 ng/m³ or more. In Milwaukee, an atmospheric concentration of 3.4 ng/m³, has been found inside some houses in the U.S.

This request for withdrawal of pork products was confirmed in a press release by the Food Safety Authority of Ireland on December 6.

Environmental transport and transformations

Due to their low vapour pressure, in the environment PCBs goes mainly in the hydrosphere (despite their hydrophobicity, the great amount of water in the oceans can dissolve a fair great amount of PCBs), in the organic fraction of soil, and in organisms. However, a small amount of PCBs have been detected globally in the atmosphere, from the most urbanized areas that are the centers for PCB pollution, to regions north of the Arctic Circle. Whereas the hydrosphere is the main reservoir, the atmosphere serves as the primary route for global transport of PCBs, particularly for those congeners with 1 to 4 chlorine atoms.

Atmospheric concentrations of PCBs tend to be lowest in rural areas, where they are typically in the picogram per cubic meter range, higher in suburban and urban areas, and highest in city centres, where they can reach 1 ng/m³ or more. In Milwaukee, an atmospheric concentration of 1.9 ng/m³ has been measured, and this source alone was estimated to account for 120 kg/year of PCBs entering Lake Michigan. Concentrations as high as 35 ng/m³, 10 times higher than the EPA guideline limit of 3.4 ng/m³, have been found inside some houses in the U.S.

Volatilization of PCBs in soil was thought to be the primary source of PCBs in the atmosphere, but recent research suggests that ventilation of PCBindustrial indoor air from buildings is the primary source of PCB contamination in the atmosphere.

In the atmosphere, PCBs may be degraded by hydroxyl radical, or directly by photolysis of carbon - chlorine bonds (even if this is a less important process). In biosphere, PCBs can be degraded by either bacteria or eukaryotes, but the speed of the reaction depends on both the number and the disposition of chlorine atoms in the molecule: less substituted, meta- or para-substituted PCBs undergo biodegradation faster than more substituted congeners.

In bacteria, PCBs may be dechlorinated through reductive dechlorination, or oxidized by dioxygenase enzyme. In eukaryotes, PCBs may be oxidized by mixed function oxidase enzyme.

Health effects

The toxicity of PCBs had been known since before its first production through research done by producing companies themselves back in the 1930s; however, these conclusions were dismissed as negligible. The toxicity of PCBs to animals was first noticed by the rest of society in the 1970s, when emaciated seabird corpses with very high PCB body burdens washed up on beaches. Since seabirds may die far out at sea and still wash ashore, the true sources of the PCBs were unknown. Where they were found was not a reliable indicator of where they had died. The toxicity of PCBs varies considerably among congeners. The coplanar PCBs, known as non-ortho PCBs because they are not substituted at the ring positions ortho to (next to) the other ring, (i.e. PCBs 77, 126, 169, etc), tend to have dioxin-like properties, and generally are among the most toxic congeners. Because PCBs are almost invariably found in complex mixtures, the concept of toxic equivalency factors (TEFs) has been developed to facilitate risk assessment and regulatory control, where more toxic PCB congeners are assigned higher TEF values. One of the most toxic compounds known, 2,3,7,8-tetrachlorodibenzo[p]dioxin, is assigned a TEF of 1.

Signs and symptoms

Humans

The most commonly observed health effects in people exposed to extremely high levels of PCBs are skin conditions such as chloracne and rashes, but these were known to be symptoms of acute systemic poisoning dating back to 1922. Studies in workers exposed to PCBs have shown changes in blood and urine that may indicate liver damage. In Japan, 1968 280 kg of PCBs contaminated rice bran oil used as chicken feed, resulting in a mass poisoning known as Yushō Disease in over 14,000 people. Common symptoms included dermal and ocular lesions, irregular menstrual cycles and a lowered immune response. Other symptoms included fatigue, headache, cough, and unusual skin sores. Additionally, in children, there were reports of poor cognitive development. There have also been studies of the health effects of PCBs in the general population and in children of mothers who were exposed to PCBs.

Animals

Animals that eat PCB-contaminated food even for short periods of time suffer liver damage and may die. In 1968 in Japan, 400,000 birds died after eating poultry feed that was contaminated with PCBs. Animals that ingest smaller amounts of PCBs in food over several weeks or months develop various health effects, including anemia; acne-like skin conditions (chloracne); and liver, stomach, and thyroid gland injuries (including hepatocarcinoma). Other effects of PCBs in animals include changes in the immune system, behavioral alterations, and impaired reproduction. PCBs are not known to cause birth defects in humans, although those that have dioxin-like activity are known to cause a variety of teratogenic effects in animals.

Effects during pregnancy-breastfeeding

Women who were exposed to relatively high levels of PCBs in the workplace or ate large amounts of fish contaminated with PCBs had babies that weighed slightly less than babies from women who did not have these exposures. Babies born to women who ate PCB-contaminated fish also showed abnormal responses in tests of infant behavior. Some of these behaviors, such as problems with motor skills and a decrease in short-term memory, lasted for several years. Other studies suggest that the immune system was affected in children born to and nursed by mothers exposed to increased levels of PCBs. The most likely way infants will be exposed to PCBs is from breast milk.
Transplacental transfers of PCBs were also reported. Studies have shown that PCBs alter estrogen levels in the body and contribute to reproduction problems. In the womb, males can be feminized or the baby may be intersex, neither a male nor a female. Also, both sets of reproductive organs may develop. More instances of this are being reported. Biological magnification of PCBs has also led to polar bears and whales that have both male and female sex organs and males that cannot reproduce. This effect is also known as endocrine disruption. Endocrine Disrupting Chemicals (EDC’s) pose a serious threat to reproduction in top-level predators.

Cancer link
A few studies of workers indicate that PCBs were associated with specific kinds of cancer in humans, such as cancer of the liver and biliary tract. Polychlorinated biphenyls (PCBs) have been shown to mimic the action of oestrogen in breast cancer cells and can enhance breast carcinogenesis. Rats that ate food containing high levels of PCBs for two years developed liver cancer. The Department of Health and Human Services (DHHS) has concluded that PCBs may reasonably be anticipated to be carcinogens. The EPA and the International Agency for Research on Cancer (IARC) have determined that PCBs are probably carcinogenic to humans. PCBs are also classified as probable human carcinogens by the National Cancer Institute, World Health Organization, and the Agency for Toxic Substances and Disease Registry. Recent research by the National Toxicology Program has confirmed that PCB126 (Technical Report 520) and a binary mixture of PCB126 and PCB153 (Technical Report 531) are carcinogens.

Mechanism of action
As discussed, PCBs exhibit a wide range of toxic effects. These effects may vary depending on the specific PCB. Similar to dioxin, toxicity of coplanar PCBs and mono-ortho-PCBs are thought to be primarily mediated via binding to aryl hydrocarbon receptor (AhR). Because AhR is a transcription factor, abnormal activation may disrupt cell function by altering the transcription of genes. The concept of toxic equivalency factors (TEF) is based on the ability of a PCB to activate AhR. However, not all effects may be mediated by the AhR receptor, and PCBs do not alter estrogen concentrations to the same degree as other ligands of the AhR receptor such as PCDD and PCDF, possibly reflecting the reduced potency of PCBs to induce CYP1A1 and CYP1B1. Examples of other actions of PCBs include di-ortho-substituted non-coplanar PCBs interfering with intracellular signal transduction dependent on calcium; this may lead to neurotoxicity. Ortho-PCBs may disrupt thyroid hormone transport by binding to transthyretin.

Containment
Because of its difficult containment, many buildings (at least in the U.S.A.) with known high PCB dangers have been evacuated and shutdown. In many states, including California, laws require any building with such dangers to be sealed and locked, with large warning signs on every entrance point indicating a PCB presence and also a notice to indicate the presence of chemicals known to cause cancer, health problems or reproductive harm. Until a safe solution can be well established, many of these buildings remain undemolished and sealed. Some forms of containment other than building closure and lockdown are below.

Landfill – Large quantities of PCBs have been placed in landfill sites, mainly in the form of transformers and capacitors. Many municipal sites are not designed to contain these pollutants and PCBs are able to escape into the atmosphere or ground water. No emissions above background are seen if the landfill is designed correctly.

Methods of destruction
These can be separated into three distinct categories: physical, microbial, and chemical destruction.

Physical
Incineration – Although PCBs do not ignite themselves, they can be combusted under extreme and carefully controlled conditions. The current regulations require that PCBs are burnt at a temperature of 1200 °C for at least two seconds, in the presence of fuel oil and excess oxygen. A lack of oxygen can result in the formation of PCDDs, PCDFs and dioxins, or the incomplete destruction of the PCBs. Such specific conditions mean that it is extremely expensive to destroy PCBs on a tonnage scale, and it can only be used on PCB-containing equipment and contaminated liquid. This method is not suitable for the decontamination of affected soils.

Ultrasound – In a similar process to combustion, high power ultrasonic waves are applied to water, generating cavitation bubbles. These then implode or fragment, creating microregions of extreme pressures and temperatures where the PCBs are destroyed. Water is thought to undergo thermolysis, oxidising the PCBs to CO, CO2 and hydrocarbons such as biphenyl, and releasing chlorine. The scope of this method is limited to those congeners which are the most water soluble; those isomers with the least chlorine substitution.

Irradiation – If a deoxygenated mixture of PCBs in isopropanol or mineral oil is subjected to irradiation with gamma rays then the PCBs will be dechlorinated to form biphenyl and inorganic chloride. The reaction works best in isopropanol if potassium hydroxide (caustic potash) is added. Solvated electrons are thought to be responsible for the reaction. If oxygen, nitrous oxide, sulfur hexafluoride or nitrobenzene is present in the mixture then the reaction rate is reduced. This work has been done recently in the US often with used nuclear fuel as the radiation source.

Pyrolysis – Destruction of PCBs with pyrolysis using plasma arc processes, like incineration uses heat, however unlike incineration, there is no combustion. The long chain molecules are broken with extreme temperature provided by an electric arc in an inert environment. Adequate post-pyrolysis treatment of the resultant products is required in order to prevent the risk of back reactions.

Microbial
Much recent work has centered on the study of micro-organisms that are able to decompose PCBs. Generally, these organisms work in one of two ways: either they use the PCB as a carbon source, or destruction takes place through reductive dechlorination, with the replacement of chlorine with hydrogen on the biphenyl skeleton. However, there are significant problems with this approach. Firstly, these microbes tend to be highly selective in their dechlorination, with lower chlorinated biphenyls being readily transformed, and with preference to dechlorination in the para and meta positions. Secondly, microbial dechlorination tends to be rather slow acting on PCB as a soil contaminant in comparison to other methods. Finally, while microbes work well in laboratory conditions, there is often a problem in transferring a successful laboratory strain to a natural system. This is because the microbes can access other sources of carbon, which they decompose in preference to PCBs.

Further recent developments have focused on testing enzymes and vitamins extracted from microbes which show PCB activity. Especially promising seems to be the use of vitamin B12, in which a cobalt ion is in oxidation state (III) under normal redox conditions. Using titanium (III) citrate as a strong redoxant converts the cobalt from Co(III) to Co(II), giving a new vitamin known...
as B12s, which is a powerful nucleophile and reducing catalyst. This can then be used on PCBs, which it dechlorinates in a rapid and selective manner.

**Chemical**

Many chemical methods are available to destroy or reduce the toxicity of PCBs.

**Nucleophilic aromatic substitution** is a method of destroying low concentration PCB mixtures in oils, such as transformer oil. Substitution of chlorine by polyethylene glycols occurs in under two hours under a blanket of nitrogen, to prevent oxidation of the oil, to produce aryl polyglycols, which are insoluble in the oil and precipitate out.

Between 700 and 925 °C, H2 cleaves the carbon-chlorine bond, and cleaves the biphenyl nucleus into benzene yielding HCl without a catalyst. This can be performed at lower temperatures with a copper catalyst, and to yield biphenyl. However, since both of these routes require an atmosphere of hydrogen gas and relatively high temperatures, they are prohibitively expensive.

Reaction with highly electropositive metals, or strong reducing agents such as sodium naphthalide, in aprotic solvents results in a transfer of electrons to the PCB, the expulsion of a chloride ion, and a coupling of the PCBs. This is analogous to the Wurtz reaction for coupling halogenoalkanes. The effect is to polymerise many molecules, therefore reducing the volatility, solubility and toxicity of the mixture. This methodology is most successful on low strength PCB mixtures and can also be performed electrochemically in a partly aqueous bicontinuous microemulsion.

The solution photochemistry of PCBs is based on the transfer of an electron to a photochemically excited PCB from a species such as an amine, to give a radical anion. This either expels a chloride ion and the resulting aryl radical extracts a hydrogen atom from the solvent, or immediately becomes protonated, leading to the loss of a chlorine atom. It is useful only for water soluble PCBs.

The major pathway for atmospheric destruction of PCBs is via attack by OH radicals. Direct photolysis can occur in the upper atmosphere, but the ultraviolet wavelengths necessary to excite PCBs are shielded from the troposphere by the ozone layer. It has, however, been shown that higher wavelengths of light (> 300 nm) can degrade PCBs in the presence of a photosensitizer, such as acetone.

The Schwartz reaction is the subject of much study, and has significant benefits over other routes. It is advantageous since it proceeds via a reductive process, and thus yields no dioxins through oxidation. The proposed reaction scheme involves the electron transfer from a titanium (III) organometallic species to form a radical anion on the PCB molecule which expels chlorine to eventually form the relatively non-toxic biphenyl.

**Very TOXIC compounds Not included in this list are others that you might want to check out as well; Such as:**

- High Fructose Corn Syrup in Almost Every Product on the Market, this compound upsets the sugar metabolism and it does not trigger the brain to recognize the sugar, so you feel hungry and continue to eat making you fatter and fatter
- Acrylamide in Most Food Products Like Coffee, Frozen French Fries, these products are made when we boil or superheat an oil and they are cancer causing carcinogenic compounds
- Organochlorines, highly toxic compounds readily available in our culture
- Dioxins Dioxin is formed by burning chlorine-based chemical compounds with hydrocarbons. The major source of dioxin in the environment comes from waste-burning incinerators of various sorts and also from backyard burn-barrels. Dioxin pollution is also affiliated with paper mills which use chlorine bleaching in their process and with the production of Polyvinyl Chloride (PVC) plastics and with the production of certain chlorinated chemicals (like many pesticides).
Good Water

Drinking Water to Maintain Good Health

Water - The Beverage Your Body Needs Most

Drinking Water

Drinking water is so important for good health. When you were a kid in school, you learned that each molecule of water is made up of two hydrogen atoms and one oxygen atom. You may also have learned that it was great fun to fill up your squirt guns with water, at least until the principal caught you. What you may not have learned, however, was how much water you needed in order to be a healthy human being.

Why You Need to Drink Water

Your body is estimated to be about 60 to 70 percent water. Blood is mostly water, and your muscles, lungs, and brain all contain a lot of water. Your body needs water to regulate body temperature and to provide the means for nutrients to travel to all your organs. Water also transports oxygen to your cells, removes waste, and protects your joints and organs.

Drinking water is important for your good health, but it is possible to drink too much water when you drink a huge amount of water in a very short time. This condition is called hyponatremia and can be very dangerous. If you drink 3 gallons of water in one hour it can kill you. So a Paracelsus once said “everything is a medicine everything is a poison it is only a matter of dose.”

Signs of Dehydration

You lose water through urination, respiration, and by sweating. If you are very active, you lose more water than if you are sedentary. Diuretics such as caffeine pills and alcohol result in the need to drink more water because they trick your body into thinking you have more water than we need.

Symptoms of mild dehydration include chronic pains in joints and muscles, lower back pain, headaches and constipation. A strong odor to your urine, along with a yellow or amber color indicates that you may not be getting enough water. Note that riboflavin, a B Vitamin, will make your urine bright yellow. Thirst is an obvious sign of dehydration and in fact, you need water long before you feel thirsty.

How Much Water do You Need to Drink?

A good estimate is to take your body weight in pounds and divide that number in half. That gives you the number of ounces of water per day that you need to drink. For example, if you weigh 160 pounds, you should drink at least 80 ounces of water per day. If you exercise you should drink another eight ounce glass of water for every 20 minutes you are active. If you drink alcohol, you should drink at least an equal amount of water. When you are traveling on an airplane, it is good to drink eight ounces of water for every hour you are on board the plane. If you live in an arid climate, you should add another two servings per day. As you can see, your daily need for water can add up to quite a lot.

Twenty percent of your water need will come from the foods you eat. The rest of your water need should come from the beverages you drink. Water is the best choice. Sodas have a lot of sugar in them, so if you drink sodas, you may take in more calories than you need. Herbal teas that aren't diuretic are fine. Sports drinks contain electrolytes and may be beneficial, just look out for added sugar and calories that you don’t need. Juices are good because they have vitamins and nutrients. Caffeinated beverages will also add to your daily water need. Even though caffeine is a diuretic, if you regularly consume caffeine, your body will regulate itself to that diuretic effect.

Drink Enough Water

It may be difficult to drink enough water on a busy day. Be sure you have water handy at all times by keeping a bottle for water with you when you are working, traveling, or exercising. If you get bored with plain water, add a bit of lemon or lime for a touch of flavor. There are some brands of flavored water available, but watch for extra calories.

SUMMARY

So to sum up this book we see that our bodies are Quantic electrical fields. We need to intake high energy left handed products from nature. Only nature knows truly how to make Nutrition for our bodies. SINthetic compounds like vitamins, food additives, preservatives and even excess cooking destroys the nutritional quality. Get good sugars, fatty acids, proteins that are compatible with the body. Avoid bad sugars, fats and proteins.
So to sum up this book we see that our bodies are Quantic electrical fields. We need to intake high energy left handed products from nature. Only nature knows truly how to make Nutrition for our bodies. SINthetich compounds like vitamins, food additives, preservatives and even excess cooking destroys the nutritional quality. Get good sugars, fatty acids, proteins that are compatible with the body. Avoid bad sugars, fats and proteins. Remember Only Nature Knows

Dr. Desi Says

Problem
The World’s Problem is too much Carbon Dioxide + too little Oxygen.

Solution
The Solution is Plants

According to Quantum Electro-Dynamics, plants take CO₂, and convert it to O₂. We must encourage and pollinate, stop wasting good farm land anyway, use our factories to develop large small scale plants that sit in the sun to desalinate sea water and use the water to grow plants HYDROPONICALLY.

In the Garden of Eden the Serpent tempted the woman and the man. They gained knowledge but lost innocence.

Mankind has developed many false beliefs based on the premise of this principle. These false beliefs have jeopardized the planet. False beliefs such as synthetic drugs and foods, that petroleum should be our fuel, allopatic medicine, tobacco, deodorant, sugar, meat as a staple food, unique education to keep minorities down, the survival of the fittest, and that the media is real and unbiased. In fact these false beliefs make money and greed become uncomparable. Money is a drug.

Now at the time of change, an Angel of both sexes will tempt the serpent. The serpent is the base lizard brain in all humans. This lizard brain is the source of anger, hate, aggression, greed, and the delusion and clinging to these beliefs that make money but threaten the very existence of human life on this planet. The Angel will defeat the greed and delusion of the lizard brain and lead humanity to a thousand years of peace harmony, freedom from diseases degenerative diseases, cross gender discrimination, and inequality.

The Angel will return us to the Garden of Eden.

1. We must stop the over consumption of meat and switch to the more healthy fruits and vegetables. Wake up people’s minds.
2. Switch from fossil fuels to Bio-fuels and Bio-mass fuels.
3. Limit petro-synthetic chemical production and use organic chemicals from plants such as agave or herbs.
4. Use Intelligence sugar for Batteries, and fructose sugar for foods.
5. Use more Natural Medicines by changing the law to not just protect Patents but to protect Natural Recipes and Natural Made Medicines.
6. Stop the Danger of GMOs to destroy the balance
In Hydrogen if the protons are like marbles, the electron is over a kilometer away the next atom's electron is over 2 kilometers away, the next proton is over 4 kilometers away. So there is more than 99.99999999999999999999% empty space. This space is filled with energetic fields.

Atoms are 99.9999999999% empty space and the empty space between atoms is just as or emptier 99.999999999999999999999999%. Electrons repel of course so the atoms with outer electrons repel each other. Why don't things pass right through things?

Things don't fall through other things because they are levitating on an energetic electrostatic fields, I am not kidding! When you sit on a chair, you are not really touching it. You see, every atom is surrounded by a shell of electrons. This electron cloud presents a rather negative face to the world. Remember that like charges repel each other. When two atoms approach each other, their electron shells push back at each other, despite the fact that each atom's net charge is 0. This is a very useful feature of nature. It makes our lives a lot easier.

Now the question you should be asking is, if atoms push away from each other, why doesn't the universe just blow away from itself? The answer is gravity of course and actually most atoms' quantum electron shells are not full. When two atoms come together and have empty spaces in their electron quantum shells, they will share electrons to fill in the spaces in both of their shells. Yes, the electrons really do go back and forth between atoms and they do so pretty fast. Outer Electrons tend to be kind of mobile, which is also a very nice feature of nature, since without it your walkman would not work or you would not be alive. It is the free electrons and protons in the body that allow life.

Once both atoms' outer shells are full due to this electron sharing, they go back to their usual repulsive behavior. This, by the way, is how we get molecules, hormones, enzymes etc and the secret to understanding Chemistry, Biology, Medicine, Physiology etc. It's all about the electrons and protons, charged particles and vibration! How about a medical device to measure and correct electron disorders? We call it SCIO.

The electrons and atoms of our complex Fractal body obey quantum, QED, photonic, electro-magnetic-static laws. This is a mouthful so we abbreviate and since these are all energy let's say ENERGETIC.

There is undeniably a body electric and there is indeed an Energetic Medicine. Only a presumptive fool would assume otherwise. There is pressure from the chemical companies and their vast wealth and pervasive influence to view the body as a set of chemicals. But these chemicals are all made of energetic fields and they obey energetic laws like quantum, electro-magnetic, static, quantum electro-dynamic photonic laws.

It is clear to see that no medical doctor or any scientist is fully aware of the real nature of what our bodies truly are. Few medical personnel even know what an electron is. Medicine has made the mistake of ignoring the body electric and frowning on energetic medicine. Traditional medicine invested its future into synthetic chemistry and we now all know that SINthetic chemicals cause side effects that the some of the public does not want. Doctors depend on their prescription pad, and some people are tired of it. Some People want to exercise their freedom of choice and use natural medicine with minimal risk, and safe forms of energetic medicine.

Most of the electrons in the human body are bond very tightly, but there are enough free electrons to permit the functions of life to occur. All functions of life involve electrons and photons. There are specific patterns of energetic interactions that are healthy and normal and disease states occur when there is an upset in the energetic stability.

Energetic medicine in the past has made several scientific mistakes. First the hand delivered point probe was too sensitive to operator control and it was too slow to measure the body electric's changing activity. The muscle testing was also found to be 100% under operator control in all tests and thus was not measuring the patient's body but measuring the therapist's intent. Many claims were not supported with research or with clinical evidence. There were many charlatans selling illegal even complete bogus fraudulent devices with exorbitant claims. Certain Russian devices were not supported with research or with clinical evidence. There were many charlatans selling illegal even complete bogus fraudulent devices with exorbitant claims. Certain Russian devices and others were found to be completely deceptive shams and doctors have lost their license using them.

Recently the regulatory bodies have been mandated to make the energetic medicine people put up the evidence to support their claims. We at SCIO have done so. We now have a CE stamp of approval for our CE mark and this paper is about the claims we and you can make in print or elsewhere. Congratulations everyone, energetic medicine is saved. We have made the studies correctly, found the literature evidence, and compiled the dossier to support the claims we make. By surveying the world's best literature on all electrical medical data we complied. And we made the CE evaluation to make our device legal for sale around the world.
There are about 100 trillion cells in the human body and another 50 trillion microorganisms in the gut. All of these cells are in communication with each other and the master regulator, the Brain. The cells communicate via signals of:

1. Electro-Magnetic Radiation (EMR) (that is Photons and only the photons touch things), this is mitogenic radiation and infrared body heat which also can transmit information
2. electro-magnetic-static free electrons, or free protons (electricity)
3. intra-cellular ionic charged particles, (sodium and potassium channel Pump of neurons)
4. extra-cellular ionic charged particle, osmosis regulation, water circulation
5. large molecular paramagnetic substance like enzymes and hormones
7. The vibrations or cycles of each of these transfers is the frequency of operation.
A FEW STRESS RELATED DISEASES

1. Acid Peptic Disease
2. Alcoholism
3. Asthma
4. Fatigue
5. Tension Headache
6. Hypertension
7. Insomnia
8. Irritable Bowel Syndrome
9. Ischemic Heart Disease
10. Psychoneuroses
11. Sexual Dysfunction
12. Skin diseases like Psoriasis, Lichen planus, Urticaria, Pruritus, Neurodermatitis etc

13. High Blood Pressure
   - Ischemic Heart Disease
   - Peptic Ulcer
   - Irritable Bowel Syndrome
   - Asthma
   - Tension Headache
   - Psychoneuroses
   - Fatigue
   - Insomnia
   - Sexual Dysfunction
   - Alcoholism
   - Smoking
   - Skin Diseases like Psoriasis, Urticaria, Neurodermatitis, Pruritus etc
   - (List incomplete)

In fact all diseases are associated with or aggravated by stress. We now know that the electro-stress is increasing. The SCIO balances the body to better deal with Electro Smoke or Electro-Stress. See electro smoke paper

Ease of flow of information is health. Stressors deregulate the flow and produce Dis-Ease, Dis-Ease disease. Disease is problems with the flow of health. See the causes of disease in the IMUNE Literature.

The Brain receives Photonic, Electrical, and Chemical information from all of the cells of the body, to regulate all of the body processes.

With the DNA of 100 trillion (100,000,000,000,000) cells sending information to all of the Brain, it is an overwhelming task of the Body Electric

There are over 100 billion neurons in the Brain.

There are approximately 10,000 cellular Operations Happening every second.

This means there is 10 to the 18th bits of information going to the brain every second. But the Reticular Activating System (RAS Word Brain) can only handle 1 million bits of Data a second or it is overloaded.

So the word area is getting one percent of one percent of one percent of one percent of one percent of one percent of one percent of one percent of one percent of one percent of one percent of one percent of the information of life. We need to measure the body electric to determine health.

Verbal lack of symptoms is inadequate. You can be really sick and not know it verbally. But your body electric knows all of the processes right down to the electron.
The SCIO measure the Body Electric variables of voltage, amperage, resistance, hydration, oxidation, Ph and the oscillations of each of the electrical factors in the body. These oscillations make up some of the standard biofeedback measures.

The SCIO can measure the brain wave (EEG), heart electric (ECG), muscles (EMG), Skin Resistance (GSR) and measure global and quadrant body voltage, amperage, resistance, hydration, oxidation, and Ph. EEG, EMG, ECG all involve oscillations. GSR or skin resistance does not involve oscillation. Resistance is measured without regular patterns of oscillation. This is one of the failures of the Voll and point probe devices.

The SCIO can treat Pain (MENS), Trauma (EWH), Emotions (MCES), and Reactivity (TVEP)

Research has shown that when you apply an electrical impulses of a certain nature to tissue you can electrically treat pain, increase osmosis, speed up healing, measure reactivity, correct brain wave, treat emotional disturbances like addiction, insomnia, anxiety, increase intellectual thinking and help learning disabilities. This and many more is shown in the literature and registered with the FDA as treatment devices.

**Electrolytes**

Our discussion of Quantum Nutrition must deal with the electrical properties of the body as affected by our foods. Water has incredible properties as we describe in the WATER book, but pure water does not conduct electricity. But add some mineral salt and you get an electrolyte solution and it conducts very easily. This makes the body electric work and allows for life to exist. All life is electrical.

When you exercise heavily, you lose electrolytes in your sweat, particularly sodium and potassium.

**Electrolyte** is a "medical/scientific" term for salts, specifically ions. The term electrolyte means that this ion is electrically-charged and moves to either a negative (cathode) or positive (anode) electrode:
Electrolytes are the smallest of chemicals that allow the body to work. Electrolytes such as sodium, potassium, and others are critical in allowing cells to function. They generate electricity, contract muscles, move water and fluids within the body, and participate in myriad other activities.

For example, your body fluids -- blood, plasma, interstitial fluid (fluid between cells) -- are like seawater and have a high concentration of sodium chloride (table salt, or NaCl). The electrolytes in sodium chloride are:

- sodium ion (Na\(^+\)) - cation
- chloride ion (Cl\(^-\)) - anion

As for your body, the major electrolytes are as follows:

- sodium (Na\(^+\))
- potassium (K\(^+\))
- chloride (Cl\(^-\))
- calcium (Ca\(^{2+}\))
- magnesium (Mg\(^{2+}\))
- bicarbonate (HCO\(_3^-\))
- phosphate (PO\(_4^{2-}\))
- sulfate (SO\(_{4}^{2-}\))

Electrolytes are important because they are what your cells (especially nerve, heart, muscle) use to maintain voltages across their cell membranes and to carry electrical impulses (nerve impulses, muscle contractions) across themselves and to other cells. Your kidneys work to keep the electrolyte concentrations in your blood constant despite changes in your body. For example, when you exercise heavily, you lose electrolytes in your sweat, particularly sodium, magnesium and potassium. These electrolytes must be replaced to keep the electrolyte concentrations of your body fluids constant.

So, many sports drinks have sodium chloride or potassium chloride added to them. They also have sugar and flavorings to provide your body with extra energy and to make the drink taste better. They most always have the wrong balance of electrolytes and thus these sport drinks create more damage. Avoid them. You can make a better one with using 100% fruit juice rich in natural Fructose as one part juice to two parts good water.

Another example where electrolyte drinks is important is when infants/children have chronic vomiting or diarrhea, perhaps due to intestinal flu viruses. When children vomit or have diarrhea, they lose electrolytes. Again, these electrolytes and the fluids must be replaced to prevent dehydration and seizures. Therefore, drinks such as Pedialyte have sodium and potassium in them like the sports drinks do. However, pediatricians do not recommend giving sports drinks to a sick child! Sports drinks have much higher sugar concentrations than Pedialyte and the high sugar is not a proper treatment.

Electrolytes are the smallest of chemicals that allow the body to work. Electrolytes such as sodium, potassium, and others are critical in allowing cells to function. They generate electricity, contract muscles, move water and fluids within the body, and participate in myriad other activities.

The concentration of electrolytes in the body is controlled by a variety of hormones, most of which are manufactured in the kidney and the adrenal glands. Sensors in specialized kidney cells monitor the amount of sodium, potassium, and water in the bloodstream. The body functions in a very narrow range of normal, and it is hormones like renin (made in the kidney), angiotensin (from the lung, brain and heart), aldosterone (from the adrenal gland), and antidiuretic hormone (from the pituitary) that keep the electrolyte balance within those limits.

Keeping electrolyte concentrations in balance also includes stimulating the thirst mechanism when the body gets dehydrated. The thirst mechanism weakens somewhere between the age of 15 to 25. The hypothalamus where the thirst mechanism is most focused burns out and our bodies do not properly provide the thirst signal. So most of us live in a sub-clinical state of dehydration. This can lead to many disorders such as hypernatremia. We need to make a conscious effort to drink more water.

Sodium (Na)

Sodium is most often found outside the cell, in the plasma (the non-cell part) of the bloodstream. It is a significant part of water regulation in the body, since water goes where the sodium goes. If there is too much sodium in the body, perhaps due to high salt intake in the diet (salt is sodium plus chloride), it is excreted by the kidney, and water follows.

Sodium is an important electrolyte that helps with electrical signals in the body, allowing muscles to fire and the brain to work. It is half of the electrical pump at the cell level that keeps sodium in the plasma and potassium inside the cell.

Conditions of Sodium Imbalance

Hypernatremia (hyper= too much + natr= sodium + emia=in the blood) is usually associated with dehydration, and instead of having too much sodium, there is too little water. This water loss can occur from illnesses with vomiting or diarrhea, excessive sweating from exercise or fever, or from drinking fluid that has too high concentrations of salt.

Hyponatremia (hypo=too little) is caused by water intoxication (drinking so much water that it dilutes the sodium in the blood and overwhelms the kidney’s compensation mechanism) or by a syndrome of inappropriate anti-diuretic hormone secretion (SIADH). SIADH can be associated with illnesses like pneumonia, brain diseases, cancer, thyroid problems, and some medications.

Symptoms of Sodium Imbalance

Too much or too little sodium can cause cells to malfunction. Lethargy, confusion, weakness, swelling, seizures, and coma are some symptoms that can occur with hyper- or hyponatremia. The treatment of these conditions is dependent on the underlying cause, but it is important for the healthcare provider to correct the sodium imbalance relatively slowly. Rapid correction can cause abnormal flow of water into or out of cells. This is especially important to prevent brain cell damage.

When to stop Salt.

We should get three times more potassium than sodium and this is not the case with over consumption of salt today. Use more paprika (rich in Potassium) and less salt.
sodium: 1.5 grams of sodium or 3.8 2.3 grams of sodium or 5.8 grams of salt (just under a teaspoon of salt daily—almost a 1/2 teaspoon) daily. Most women get twice that.

Excessive sodium intake can cause high blood pressure, a major risk factor for heart disease, stroke and kidney disease.

chloride: 2.3 grams daily Although chloride isn’t listed on Nutrition Facts panels, you can regulate your intake by watching how much sodium you consume and keeping your daily salt intake under a teaspoon.

Salt is hidden in most foods for flavor. So most people are already getting to much please use salt substitutes like the Desi salt substitutes listed in this book.

potassium: Potassium is a very important mineral for the proper function of all cells, tissues, and organs in the human body. It is also an electrolyte, a substance that conducts electricity in the body, along with sodium, chloride, calcium, and magnesium. Potassium is crucial to heart function and plays a key role in skeletal and smooth muscle contraction, making it important for normal digestive and muscular function, too. Many foods contain potassium, including all meats, some types of fish (such as salmon, cod, and flounder), and many fruits, vegetables, and legumes. Dairy products are also good sources of potassium.

Hypokalemia (hypo=too little) is most often seen when the body loses too much potassium from causes like vomiting, diarrhea, sweating, and medications such as diuretics or laxatives. It is often seen in diabetic ketoacidosis, where potassium is excessively lost in the urine. Since chemicals in the body are related in their metabolism, low magnesium levels can be associated with hypokalemia.

Hypocalcemia (hypo=too little) is usually associated with eating disorders or lack of parathyroid hormone. Symptoms include weakness, lack of energy, muscle cramps, stomach disturbances, an irregular heartbeat, and an abnormal EKG (electrocardiogram, a test that measures heart function). Hypokalemia is usually caused by the body losing too much potassium in the urine or intestines; it’s rarely caused by a lack of potassium in the diet. Hypokalemia can be life-threatening and
should always be treated by a doctor.

High Blood Pressure

Some studies have linked low levels of potassium in the diet with high blood pressure. And there is some evidence that potassium supplements might cause a slight drop in blood pressure and that a high diet of potassium rich foods and successfully lower blood pressure. It may be that taking potassium only helps lower blood pressure if you're not getting enough of this mineral to start with. Before taking potassium or any supplement for high blood pressure, talk to your doctor. But a high potassium diet is a good idea.

Stroke

People who get a lot of potassium in their diet have a lower risk of stroke, improved blood pressure, less risk of heart attacks, and greater stamina. However, potassium supplements don't seem to have the same benefit.

Inflammatory Bowel Disease (IBD)

People with IBD (ulcerative colitis or Crohn's disease) often have trouble absorbing nutrients from their intestine, and may have low levels of potassium and other important nutrients. If you have IBD, your doctor may check your potassium levels and recommend a supplement.

Dietary Sources: Potassium makes Foods more Orange in color.

Good sources of potassium include pumpkin, squash, paprika, figs, citrus juices (such as orange juice), avocados, cantaloupes, tomatoes, bananas, potatoes, lima beans, flounder, salmon, cod, chicken, and other meats.

Available Forms:

Several potassium supplements are on the market, including potassium acetate, potassium bicarbonate, potassium citrate, potassium chloride, and potassium gluconate. It is available in tablets, capsules, effervescent tablets, powders, and liquids.

Potassium can also be found in multivitamins.

But by far the best program is to get your potassium from fruits and vegetables and to lower excess salt. Studies show that Potassium rich diets are better than most blood pressure medications.

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![Potassium-Rich Foods Chart](image)

**FRUITS**

- Apple, skin 1 small 148 mg
- Apple Juice, unsweetened 1/2 cup 135 mg
- Apricots, dried 10 halves 407 mg
- Avocado 1 ounce 100 mg
- Banana 1 small 84 mg
- Cantaloupe, cubed 1 cup 427 mg
- Dates 5 277 mg
- Figs, dried 4 518 mg
- Kiwi 1 227 mg
- Mango 1 medium 233 mg
- Orange 1 small 248 mg
- Orange Juice 1/2 cup 236 mg
- Papaya 1 cup 280 mg
- Peach 1 medium 186 mg
- Pear 1 medium 188 mg
- Prune Juice, unsweetened 1/2 cup 264 mg
- Raisins 1/4 cup 273 mg
- Strawberries, raw 1 cup 254 mg
- Watermelon 1 cup 170 mg

**VEGETABLES**

- Asparagus, canned 1 cup 288 mg
- Beet, canned, cooked 1/2 cup 185 mg
- Broccoli 1/2 cup 143 mg
- Brussels Sprouts, fresh 1/2 cup 41 mg
- Cauliflower, cooked 1/2 cup 147 mg
- Green Beans, green beans 1/2 cup 177 mg
- Green Beans, fresh 1/2 cup 242 mg
- Kidney Beans, cooked 1/2 cup 187 mg
- Lettuce, romaine 1 cup 57 mg
- Mushrooms, canned 1/2 cup 277 mg
- Pinto Beans, cooked 1/2 cup 200 mg
- Potato, baked with skin 1 medium 432 mg
- Spinach, steamed 1/2 cup 415 mg
- Sweet Potato, with skin 1 538 mg
- Tomato, fresh 1/2 cup 200 mg
- Tomato Juice 1 cup 55 mg

**DAIRY**

- Cottage Cheese, 3% 1 cup 217 mg
- Ice Cream, vanilla 1/2 cup 331 mg
- Milk, 2% 1 cup 277 mg
- Ricotta Cheese 1/2 cup 554 mg
- Yogurt 8 ounces 299 mg

**OTHER**

- Almonds 2 ounces 412 mg
- Beef, lean cooked 3 ounces 224 mg
- Bread, wheat 1 slice 38 mg
- Brazil Nuts 2 ounces 310 mg
- Egg 1 medium 55 mg
- Ham, cooked 4 oz 363 mg
- Hazelnut 3 oz 490 mg
- Mackerel, 1 tablespoon 495 mg
- Peanut, salted 2 ounces 374 mg
- Peanut Butter, natural 2 tablespoons 214 mg
- Rice, brown 1 cup 125 mg
- Rice, white 1 cup 42 mg
- Salmon, baked or steamed 3 ounces 319 mg
- Salmon, canned 4 oz 409 mg
- Tuna, canned yellowfin 3 ounces 284 mg
- Turkey, roasted dark meat 3 ounces 358 mg

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How to Take It:

Potassium supplements, other than the small amount included in a multivitamin, should be taken only under your doctor’s supervision. Do not give potassium supplements to a child unless your doctor tells you to.

The recommended daily intakes of dietary potassium are listed below:

**Pediatric**
- Infants birth - 6 months: 500 mg or 13 mEq
- Infants 7 months - 12 months: 700 mg or 18 mEq
- Children 1 year: 1,000 mg or 26 mEq
- Children 2 - 5 years: 1,400 mg or 36 mEq
- Children 6 - 9 years: 1,600 mg or 41 mEq
- Children over 10 years: 2,000 mg or 51 mEq

**Adult**
- 2,000 mg or 51 Meq, including for pregnant and nursing women

Precautions:

Because of the potential for side effects and interactions with medications, you should take dietary supplements only under the supervision of a knowledgeable health care provider.

Older adults should talk to their doctor before taking potassium supplements.

Side effects can include diarrhea, stomach irritation, and nausea. At higher doses, muscle weakness, slowed heart rate, and abnormal heart rhythm may occur. Contact your health care provider if you develop severe stomach pain, irregular heartbeat, chest pain, or other symptoms.

People with hyperkalemia or kidney disease should not take potassium supplements.

People who take ACE inhibitors, potassium-sparing diuretics, or the antibiotic trimethoprim and sulfamethoxazole (Bactrim, Septra) should not take potassium.

Possible Interactions:

If you are being treated with any of the following medications, you should not use potassium without first talking to your health care provider.

The following medications may cause potassium levels to rise:
- Nonsteroidal anti-inflammatory drugs (NSAIDs): People who have poor kidney function and take NSAIDs are at higher risk.
- ACE inhibitors: These drugs treat high blood pressure, heart disease, diabetes, some chronic kidney diseases, migraines, and scleroderma. People who take ACE inhibitors and also take NSAIDs, potassium-sparing diuretics, or salt substitutes may be particularly vulnerable to hyperkalemia (too much potassium). A rise in potassium from ACE inhibitors may also be more likely in people with poor kidney function and diabetes. ACE inhibitors include:
  - Benazepril (Lotensin)
  - Captopril (Capoten)
  - Enalapril (Vasotec)
  - Fosinopril (Monopril)
  - Lisinopril (Zestril)
  - Moexipril (Univasc)
  - Perindopril (Aceon)
  - Ramipril (Altace)
  - Trandolapril (Mavik)
- Heparin (used for blood clots)
- Cyclosporine (used to suppress the immune system)
- Trimethoprim and sulfamethoxazole, called Bactrim or Septra (an antibiotic)
- Beta-blockers: Used to treat high blood pressure, glaucoma, migraines
  - Atenolol (Tenormin)
  - Metoprolol (Lopressor, Toprol-XL)
  - Propranolol (Inderal)

The following medications may cause potassium levels to decrease:
- Thiazide diuretics
  - Hydrochlorothiazide
  - Chlorothiazide (Diuril)
  - Indapamide (Lozoli)
  - Metolzaine (Zaroxolyn)
- Loop diuretics
  - Furosemide (Lasix)
  - Bumetanide (Bumex)
  - Torsemide (Demadex)
  - Ethacrynic acid (Edecrin)
Magnesium plays a key role in regulating how well the human body converts food into energy.

**Low Energy**

If you are taking any of these medications, it is important for your doctor to test your potassium levels to see whether or not you need a supplement. Do not start taking a supplement on your own.

Other potential interactions include:

- Digoxin – Low blood levels of potassium increase the likelihood of toxic effects from digoxin, a medication used to treat abnormal heart rhythms and heart failure. Your doctor will test your potassium levels to make sure they stay normal.
- Theophylline (TheoDur): Used for asthma
- Antacids
- Corticosteroids
- Fluconazole (Diflucan): Used to treat fungal infections
- Laxatives
- Insulin

**Magnesium Deficiency**

The first symptoms of magnesium deficiency can be subtle. Most magnesium is stored in the bones, so leg cramps, foot pain or muscle 'twitches' are usually the first signs. Insomnia, migraine headaches are also very common magnesium deficiency symptoms. And if ignored, some of the other more serious symptoms of Magnesium deficiency (mentioned below) can develop.

Magnesium is one of the most important minerals in the human body and is essential to good health. It is critical in over 350 essential biochemical reactions in the body including digestion, energy production, muscle function, bone formation, creation of new cells, activation of B vitamins, relaxation of muscles, and also assists in the proper functioning of the heart, kidneys, adrenals, brain and nervous system.

In fact, Magnesium is the fourth most abundant mineral in the body—it can be found in human bones, teeth and red blood cells, and activates more enzyme systems than both iron and zinc combined. It was as far back as 1971, that Dr Edmund B. Fink (a magnesium researcher at West Virginia University School of Medicine in Morgantown), recorded in ‘The Executive Health’ that:

- Magnesium deficiency not only exists but is common
- Although it is common, it is often undetected
- Chronic deficiency can produce long-term damage and can be fatal
- The manifestations of the deficiency are many and varied

**Low Energy**

Magnesium plays a key role in regulating how well the human body converts food into energy. Metabolism of carbohydrates and fats requires numerous magnesium-dependent chemical reactions. In 2002, Physiologist Henry Lukaski of the Department of Agriculture’s Human Nutrition Research Center in North Dakota (USA), established that during moderate activity, individuals with low magnesium levels use more energy—and therefore tire more quickly—than those who have adequate levels. In this study (published in the May 2002 issue of The Journal of Nutrition) he elaborates that in the first phase, 10 postmenopausal women were provided with a diet adequate in magnesium for 35 days, followed by a phase of a low-magnesium diet for 93 days, and in the last phase once again, they were provided a diet adequate in magnesium for 49 days. It was found that during the low-magnesium-status phase, the volunteers used more oxygen during physical activity and their heart rates increased by about 10 beats per minute. “When the volunteers were low in magnesium, they needed more energy and more oxygen to do low-level activities than when they were in adequate-magnesium status,” says Lukaski. These findings are consistent with other studies showing that inadequate magnesium is often associated with a need for increased oxygen during exercise and people who routinely complain of low energy can benefit from magnesium supplementation.

**Fatigue**

Research has suggested that persistent magnesium deficiency may lead to chronic fatigue syndrome (CFS). When we are magnesium deficient, our bodily functions slow down at the cellular level causing the body to become sluggish until, eventually fatigue sets in. A path-breaking study (The Lancet, March 1991) by Cox, Campbell and Dowson of the Centre for the Study of Complementary Medicine in Southampton, England, recorded that many patients with CFS have low red blood cell magnesium levels—a more accurate measure of magnesium status than routine blood analysis—and their condition may improve with magnesium supplements. They injected magnesium sulfate in a double-blind, placebo-controlled study of 32 patients with chronic fatigue syndrome. Fifteen patients, randomly chosen, received magnesium sulfate intramuscularly once a week for six weeks while the remaining 17 received injected water. Patients treated with magnesium showed better energy levels and better handling of emotions.

**Weakness**

Between 1965 and 1990 various studies were conducted in New Zealand, Australia, England, France and the Netherlands to investigate the relationship between prone sleeping position and the sudden infant death syndrome (SIDS). A review published in 1991 concluded that magnesium deficiency (muscle strength is seriously impaired in the young magnesium deficient subject) is at least one major unifying factor that explains increased SIDS in prone sleeping infants. In rats, marginal deprivation in dietary magnesium reduces exercise capacity and induces muscle weakness, an effect that can be rapidly reversed by consuming magnesium.

**PMS and Hormonal Imbalances**

Premenstrual Symptoms or PMS is a name given to varied physical and psychological symptoms like abdominal bloating, breast tenderness, headache, fatigue, irritability, anxiety and depression that occur two to seven days before the onset of menstruation. According to Dr Guy Abraham, former professor of obstetrics and gynecologic endocrinology at the UCLA School of Medicine, in most cases of PMS there are patterns of hormone imbalance that can be uncovered through testing. Carolyn Dean, MD, North Dakota, states that one of the 22 conditions magnesium deficiency may trigger or cause, is hormonal imbalance leading to premenstrual syndrome (PMS): dysmenorrhoea (cramping pain during menses); infertility; premature contractions, pre eclampsia.
and eclampsia in pregnancy. The fact that cellular magnesium levels in women with PMS are found to be significantly lower than in women who do not suffer PMS resonates the inferences of these studies. Susan Johnson, a gynaecologist at the University of Iowa who helped develop the new ACOG (American College of Obstetricians and Gynaecologists) standards advises that if you are in search of supplements that alleviate symptoms of PMS, you may benefit from calcium, magnesium and vitamins D and E.

Inability to Sleep

Insomnia or inability to sleep is another symptom of magnesium deficiency. If you find it difficult to sleep or find yourself waking up in the night with muscle spasms, cramps and stiffness, you may benefit from magnesium supplementation. In a study of more than 200 patients, Dr W.H Davis of the University of Pretoria tested magnesium as a possible means of combating insomnia. 99 percent of the patients on magnesium supplementation reported that sleep was induced rapidly and was uninterrupted. Waking tiredness disappeared, and anxiety and tension diminished during the day. No ill effects were noted on the patients participating in this 12-month long study in which before retiring they daily took eight tablets of 250 mgs each of magnesium chloride (W.H. Davis and F. Ziad, “The Role of Magnesium in Sleep”, Montreal Symposium, 1976) In the elderly, magnesium supplements were found to improve sleep by decreasing the release of cortisol, the stress hormone that causes sleep disruption.

Weakening of the Bones

For long calcium was considered the key mineral in the prevention of Osteoporosis, but new research has proved that magnesium supplementation is equally important in the treatment and prevention of osteoporosis. Magnesium comprises about 1 percent of the human bone mineral. It influences both bone matrix and bone mineral metabolism and helps our body assimilate calcium. Says Dr Barnett, an orthopaedic surgeon who has published the effects of different soil and water mineral composition levels in two US Counties on bone health: “Magnesium is perhaps, the most important single element-in bone health.” Magnesium deficiency may also be a risk factor for postmenopausal osteoporosis, as it alters calcium metabolism and affects the hormone that regulates calcium balance in the body. As the magnesium content of bone mineral decreases, bone crystals become larger and more brittle. In their study ‘Magnesium supplementation and osteoporosis’, researchers Sojka JE, Weaver CM (published in Nutrition Reviews, 1995.) found lower magnesium content and larger bone crystals in osteoporotic women and suggest that magnesium supplementation may improve bone mineral density.

Muscle Tension, Spasms and Cramps

Irritating little twitches in the eyelid or painful muscle cramping that wakes you up in the night are usually the first sign of magnesium deficiency. Magnesium is needed for proper muscle relaxation and contraction, and excessive muscle tension (resulting in spasms, tics and restlessness) could mean that you are magnesium deficient. As this mineral is lost through bodily fluids, athletes who sweat heavily while training or are prone to loose stools may experience cramping due to magnesium deficiency. Muscle cramping and other signs of low magnesium levels respond quickly and positively to magnesium supplements and changes in diet patterns to include foods high in the mineral.

Abnormal Heart Rhythm

Magnesium has a beneficial effect on the cardiovascular system. Due to its natural muscle relaxant ability, it also plays an important role in regulating blood pressure. When blood vessels are relaxed there is less resistance to the flow of blood and as a result, blood pressure is lower. Evidence suggests that low body stores of magnesium increase the risk of abnormal heart rhythms, which in turn may increase the risk of complications associated with a heart attack. In 1998, Liao F, Folsom AR and Brancat of School of Public Health, University of Minnesota conducted a large prospective study (almost 14,000 men and women) and found that increasing serum magnesium levels are associated with decreased risk of coronary heart disease in women. The Joint National Committee on Prevention, Detection, Evaluation and Treatment of High Blood Pressure recommends maintaining an adequate magnesium intake as a positive lifestyle modification for preventing and managing high blood pressure. The DASH study (Dietary Approaches to Stop Hypertension) suggests that high blood pressure can be significantly lowered by consuming a diet high in magnesium, potassium and calcium.

Headaches

Approximately 70% of patients who have tension headaches exhibit muscular tightness and tenderness. Numerous studies have indicated that there is a relationship between migraines, tension headaches and low levels of magnesium. The 1998 PubMed article ‘Role of magnesium in the pathogenesis and treatment of migraines’ by Clin Neurosci, Maukop A, Altura BM, suggests that individuals who suffer from recurrent migraine headaches have lower intracellular magnesium levels than individuals who do not experience migraines. In the March 1996 issue of journal ‘Headache’, researchers reported that patients with clustered headaches were helped by magnesium therapy. “In clustered headaches, people suffer up to 20 bouts of pain daily in a single siege that can last for months. A single infusion of magnesium has ended those clustered headaches with some relief in 2 to 7 days.” More recently in 2003, Wang F, Van Den Eeden SK, Ackerson LM, Salk SE, Reince RH, Elin RJ, conducted a placebo-controlled trial in 86 children with frequent migraine headaches and found that oral magnesium oxide reduced headache frequency.

Anxiousness

Magnesium supplementation enjoys a broad reputation as having a calming effect on anxiety symptoms, stress levels. Mildred Seeling, who started the Journal of the American College of Nutrition in 1982 had noted an association between magnesium deficiency and anxiety symptoms in her paper “Latent tetany and anxiety, marginal Mg deficit, and normocalcemia”. A different investigation by Kara H, Sahin N, Ulusan V and Aydogdu T in 2002, studied the impact of magnesium in post-surgical patients. Patients were infused with magnesium both during and following surgery and were evaluated for anxiety levels. Patients receiving the magnesium infusion required significantly less pain medication and reported less anxiety in comparison to the control group that received no magnesium.

Nervousness

Magnesium regulates nerve cell function and is essential for the proper functioning of the nervous system. Its presence in adequate amounts in the synaptic gap between nerve cells controls the rate of neuron firing. Without sufficient magnesium, the nerve cells cannot give or receive messages, and sensitivity to stimulation of all kinds is heightened. Noises seem excessively loud, lights can
appear to be too bright, emotional reactions will be exaggerated, and the affected person will generally be on edge. The brain may also be too stimulated to sleep. Magnesium supplements have a sedative effect on the nervous system and provide relief.

**Irritability**

A deficiency of magnesium can also present psychiatric symptoms like depression, restlessness and irritability. Depressed patients have been found to have lower levels of magnesium. Oral supplementation of magnesium is used as an adjunct treatment in psychiatric patients and has also been found successful in rapidly cycling bipolar affective-disorders.

Nuytten D, Van Hees J, Meulemans A, Carton H of the Department of Neurology, University Hospital Gasthuisberg, Leuven, Belgium found that magnesium depletion causes a marked irritability of the nervous system, eventually resulting in epileptic seizures. Clinical and experimental investigations have shown that, although magnesium deficiency as a cause of epilepsy is uncommon, its recognition and correction may prove life-saving.

**Kidney Stones**

Research as far back as in the 1960s had established a link between magnesium and kidney stones. In the Rodale Press publication Health Bulletin (June 13, 1964) Dr H E Sauberlich of the Army’s Fitzsimons General Hospital, Denver, quotes: "Magnesium oxide 'looks very promising' as a preventive of kidney stones". Subsequent studies have found that magnesium indeed helps prevent recurrence of calcium oxalate kidney stones, by increasing the solubility of calcium in urine. Magnesium supplements and foods rich in magnesium have also been found effective in the prevention and treatment of kidney stones.

**WAYS TO INCREASE YOUR MAGNESIUM INTAKE:**

1. Consume Green Vegetables and Whole Grains Eating a wide variety of legumes, nuts, whole grains and vegetables will help you meet your daily dietary need for magnesium. Some of the foods rich in magnesium are: Buckwheat, baking chocolate, cottonseed, tea, tofu, legumes, soybean flour, almonds, cashews, pine nuts whole wheat and leafy green vegetables including collard greens and parsley.

2. Take Magnesium Supplements Even if you are particular about eating a very well balanced diet comprising seafood, nuts and whole grains, chances are that you might still need to supplement your daily requirement with supplement like Natural Calm. Our foods, today, have fewer nutrients than 50 years ago. As soils get depleted, fewer nutrients are available to our food. Read more about the decreasing Nutrition level in our food and the need to supplement your diet with minerals like magnesium in an upcoming article. Developed by leading nutritional researcher Peter Gillham, Natural Calm features a proprietary process that provides the most absorbable, effective, fast-acting magnesium available anywhere. Natural Calm Magnesium is a 100 percent natural water-soluble magnesium citrate powder of the highest quality.

<table>
<thead>
<tr>
<th>FOOD</th>
<th>Milligrams (mg)</th>
<th>%DV*</th>
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<tbody>
<tr>
<td>Halibut, cooked, 3 ounces</td>
<td>90</td>
<td>20</td>
</tr>
<tr>
<td>Almonds, dry roasted, 1 ounce</td>
<td>80</td>
<td>20</td>
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<tr>
<td>Cashews, dry roasted, 1 ounce</td>
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<td>Soybeans, mature, cooked, ½ cup</td>
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<td>Spinach, frozen, cooked, ½ cup</td>
<td>75</td>
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</tr>
<tr>
<td>Nuts, mixed, dry roasted, 1 ounce</td>
<td>65</td>
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<tr>
<td>Cereal, shredded wheat, 2 rectangular biscuits</td>
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<td>Oatmeal, instant, fortified, prepared w/ water, 1 cup</td>
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<td>Potato, baked w/ skin, 1 medium</td>
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<td>Peanuts, dry roasted, 1 ounce</td>
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<td>Peanut butter, smooth, 2 Tablespoons</td>
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<tr>
<td>Wheat Bran, crude, 2 Tablespoons</td>
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<td>Black-eyed Peas, cooked, ½ cup</td>
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<td>10</td>
</tr>
<tr>
<td>Yogurt, plain, skim milk, 8 fluid ounces</td>
<td>45</td>
<td>10</td>
</tr>
<tr>
<td>Bran Flakes, ½ cup</td>
<td>40</td>
<td>10</td>
</tr>
<tr>
<td>Vegetarian Baked Beans, ½ cup</td>
<td>40</td>
<td>10</td>
</tr>
<tr>
<td>Rice, brown, long-grained, cooked, ½ cup</td>
<td>40</td>
<td>10</td>
</tr>
<tr>
<td>Lentils, mature seeds, cooked, ½ cup</td>
<td>35</td>
<td>8</td>
</tr>
<tr>
<td>Avocado, California, ½ cup pureed</td>
<td>35</td>
<td>8</td>
</tr>
<tr>
<td>Kidney Beans, canned, ½ cup</td>
<td>35</td>
<td>8</td>
</tr>
<tr>
<td>Pinto Beans, cooked, ½ cup</td>
<td>35</td>
<td>8</td>
</tr>
<tr>
<td>Wheat Germ, crude, 2 Tablespoons</td>
<td>35</td>
<td>8</td>
</tr>
<tr>
<td>Chocolate milk, 1 cup</td>
<td>33</td>
<td>8</td>
</tr>
<tr>
<td>Banana, raw, 1 medium</td>
<td>30</td>
<td>8</td>
</tr>
<tr>
<td>Milk Chocolate candy bar, 1.5 ounce bar</td>
<td>28</td>
<td>8</td>
</tr>
<tr>
<td>Milk, reduced fat (2%) or fat free, 1 cup</td>
<td>27</td>
<td>8</td>
</tr>
<tr>
<td>Bread, whole wheat, commercially prepared, 1 slice</td>
<td>25</td>
<td>6</td>
</tr>
<tr>
<td>Raisins, seedless, ½ cup packed</td>
<td>25</td>
<td>6</td>
</tr>
<tr>
<td>Whole Milk, 1 cup</td>
<td>24</td>
<td>6</td>
</tr>
<tr>
<td>Chocolate Pudding, 4 ounce ready-to-eat portion</td>
<td>24</td>
<td>6</td>
</tr>
</tbody>
</table>

*DV = Daily Value. DVs are reference numbers developed by the Food and Drug Administration (FDA) to help consumers determine if a food contains a lot or a little of a specific nutrient. The DV for magnesium is 400 milligrams (mg).
Desiré’s Salt Substitute

(If you’re healthy add a little sea salt to these, but if you have heart disease avoid salt)

Lemon Herb Seasoning (Salt Substitute) Recipe

• Serves/Makes: .75 cup
• Cook Time: < 30 minutes
• Difficulty: 2/5
• Ingredients: Dried Basil, Dried Oregano, Finely Ground Black Pepper, Dried Onion flakes, Whole Celery Seed

No Salt Seasoned Mix Recipe

• Serves/Makes: 2 tbsp
• Cook Time: < 30 minutes
• Difficulty: 1/5
• Ingredients: garlic powder, onion powder, thyme leaves, cumin seeds, ground, celery seed

No Salt Seasoned Mix II Recipe

• Serves/Makes: 1.333 cups
• Cook Time: < 30 minutes
• Difficulty: 1/5
• Ingredients: dried onion flakes, crushed, garlic powder, dried orange peel, crushed, ground lemon peel, crushed, ground black pepper

Salt Substitute Recipe

• Serves/Makes: 2.25 tsp.
• Cook Time: < 30 minutes
• Difficulty: 1/5
• Ingredients: dry mustard, sage, thyme, marjoram

Salt-Free Seasoning Recipe

• Serves/Makes: .5 cup
• Cook Time: < 30 minutes
• Difficulty: 1/5
• Ingredients: crushed dried minced onion flakes, crushed dried vegetable flakes, garlic powder, dried orange peel, coarse ground black pepper

Spicy Salt Substitute Recipe
• Serves/Makes: .33 cup
• Cook Time: < 30 minutes
• Difficulty: 2/5
• Ingredients: savoury, crumbled, dry mustard, onion powder, curry powder, white pepper

Table Salt Substitute Recipe
• Serves/Makes: .25 cup
• Cook Time: < 30 minutes
• Difficulty: 2/5
• Ingredients: onion powder, dry mustard, basil, celery seed, crushed, paprika

What Are the Dangers of a Salt Substitute?
Pure salt is necessary to a human being’s survival. Salt is associated with high blood pressure and heart disease when consumed in high amounts. Oftentimes, doctors will encourage the use of a salt substitute to lower the risk of these dreadful health issues.

What is in a Salt Substitute?
Salt substitutes usually replace the sodium chloride with potassium chloride, and some of them still contain the sodium chloride that you are trying to avoid.

Too Much Potassium
The potassium in a salt substitute usually contains high levels of potassium.

Potassium Can Be Lethal to a Kidney Patient
If you have kidney problems, potassium can be harmful to you. People who suffer with kidney problems cannot rid their body of excess potassium; the high potassium content in salt substitutes could be lethal to them.
Medication and Salt Substitutes

**Medication**

Heart patients are usually prescribed an ACE inhibitor, which is a critical part of their treatment. ACE inhibitors will cause our bodies to retain potassium, which could be very dangerous for a heart patient.

**Diabetes Patients Need Real Salt**

Diabetes patients will see their blood sugar and insulin levels rise if they do not get enough salt. They should consult with their physician or therapist before making the decision to use a salt substitute.

The AutoNomic Nervous System

The body needs a balance of the sympathetic nerves and the parasympathetic nerves. The sympathetic nervous system is largely our action system for flight or fight reactions stimulating muscles and senses. The parasympathetic system is a more passive system controlling digestion and immunity.

Our excessively stress filled society shifts us to more sympathetic control. This upsets the nervous balance. When the heart nerve balance is upset the result is an unsteady rhythm which will result in irregularity in the rhythm. As this continues the stress upsets the balance and puts stress on the heart till it further degrades in function. Just as when a tire is imbalanced it produces an irregular rotation. This puts strain on the whole wheel system till some part of it gives out. The balance of the autonomic nerve system is the key to good health. A doctor who learns of the secrets in this system will be able to hold the health of the world in his hands.

The sympathetic system is also known as the adrenergic system because adrenalin is the key hormone. Calcium is the key mineral. The parasympathetic system is also known as the cholinergic system because its key hormone is acetylcholine. The main mineral is potassium. Calcium fights potassium. The fast food diet of meat and potatoes is not really potassium deficient. But the potassium from them is not readily absorbed properly. Potassium needs longer time for digestion and eating fast or disobeying the rules of the stomach contribute to the potassium deficiency. (See Wellness Manual)

As the system gets more and more potassium deficient and the stress of life makes the system shift to the sympathetic control, blood pressure will tend to rise. The body also with age will tend to gain weight and have less activity. If this is not resisted, these factors will also drive up the BP.

The medical system uses calcium blockers because they think about blocking action not stimulating function. The drug companies want a drug solution to all ails.

But major studies have shown that a high potassium diet is better at controlling blood pressure. Dietary solutions are a must for a healthy heart. But dietary solutions involve eating the right foods and avoiding the harmful ones. It is not just what you eat but also what you must avoid.

Potassium tends to make foods orange. Oranges have 3 to four times more potassium than bananas. Fruits and vegetables contain more active potassium. But good digestion in the stomach is needed for absorption. Too many people drink too much liquid with meals, or use antacids or other ways to limit or block stomach processing of foods. This will limit potassium absorption. So eating the right foods and eating right is both needed.

Laxatives, diuretics, excess sweat also make for potassium loss. This contributes to the problem of potassium and magnesium loss.

Obeying the rules of the stomach is essential for maximizing the health of a person and it along with a high potassium diet of orange colored foods such as paprika, carrots, squash, pumpkin, pepper, etc. can be the most incredible help to any heart disease; In fact any disease.

So much of our society has developed to get around the stomach because it is so easy, it stimulates release of CCK which is a natural anti depressant, and it feels good. But the stomach is designed for a digestive function. If circumvented the stomach cannot function fully. The small intestine can be overloaded and large undigested fats and proteins will accumulate in the lymphatic system.

The free fatty acid pool and the free amino acid pool is disturbed. The body will have improper
building blocks for cellular development. Any disease can result, and especially heart disease.

When the Nobel Prize in medicine was awarded for research in cholesterol the world of medicine was changed. From then on doctors must realize that diet is a factor in health. The short sightedness of the medical system before this work highlights how the system was designed to overlook the obvious and look for drug solutions for everything. Now we know that excess fried foods even excess cooked foods contribute to heart disease. Sodium is a problem for many with heart problems as well. So avoiding high cholesterol and high sodium foods is important.

The energy index can tell us of the potassium / calcium balance in the body as a reflection of the sympathetic / parasympathetic system balance. If you take the systolic (upper) blood pressure add it to the diastolic (lower) blood pressure and times it by the heart rate per minute. The perfect score of (120 + 80) times 70 gives us the perfect energy index of 14,000. If you are too much sympathetic innervated or calcium excess potassium deficient then the number will be like high Blood pressure where (140 + 90) times 85 or 19550. So numbers at 20,000 or above are too high and reflect sickness. Low BP of (90+60) times 50 or 7500 is too low. This reflects too much potassium and too little calcium. Most people have heart disease from too little potassium and too much calcium. Stress reduction and a new diet will work every time. Not in a day but within the next month or two the changes will be seen.

Doctors do not want to be nutritionists and recommend diet so they use calcium blockers or ACH inhibitors rather than recommend a new diet.

The energy index can tell us of the potassium / calcium balance in the body as a reflection of the sympathetic / parasympathetic system balance.

High (140+90)x86=20,000 Needs Potassium Diet, stress reduction, exercise + lower sodium and calcium

Normal (120+80)x70=14,000

Low (90+70)x52=8,000 needs calcium, exercise

Acid Alkaline foods

"When foods are eaten they are oxidized in the body which results in the formation of residue or ash. In this residue, if the minerals sodium, potassium, calcium and magnesium predominate over sulfur, phosphorus, chlorine and uncombusted organic acid radicals, they are designated as alkaline ash foods. The converse is true for foods designated as acid ash."

Almost all foods that we eat, after being digested, absorbed, and metabolized, release either an acid or an alkaline base (bicarbonate) into blood. Grains, fish, meat, poultry, shellfish, cheese, milk, and salt all produce acid, so the introduction and dramatic rise in our consumption of these foods meant that the typical Western diet became more acid-producing. Consumption of fresh fruit and vegetables decreased, which further made the Western diet acid-producing.
Our blood is slightly alkaline, with a normal pH level of between 7.35 and 7.45. The theory behind the alkaline diet is that our diet should reflect this pH level (as it did in the past) and be slightly alkaline. Proponents of alkaline diets believe that a diet high in acid-producing foods is disrupts this balance and promotes the loss of essential minerals such as potassium, magnesium, calcium, and sodium, as the body tries to restore equilibrium. This imbalance is thought to make people prone to illness.

According to most natural practitioners, the shift to an acid-producing diet is the cause of a number of chronic diseases. Some practitioners recommend the alkaline diet if a person has the following symptoms and other illnesses have been ruled out.

- Lack of energy
- Excessive mucous production
- Nasal congestion
- Frequent colds and flu
- Anxiety, nervousness, irritability
- Ovarian cysts, polycystic ovaries, benign breast cysts
- Headache

Although conventional doctors do believe that increasing consumption of fruit and vegetables and reducing one’s intake of meat, salt, and refined grains is beneficial to health, most conventional doctors do not believe that an acid-producing diet is the foundation of chronic illness. In conventional medicine, there is evidence, however, that alkaline diets may help prevent the formation of calcium kidney stones, osteoporosis, and age-related muscle wasting.
### ADDITIONAL ALKALINE / ACIDIC FOOD CHARTS

The words "alkalizing" and "acidifying" represent the food's effect on the body and not the actual value of the food. The charts below are provided as a general guide for those trying to improve their health through diet change. Note that these may be some discrepancies between foods included on these charts.

**INFORMATION ON THESE CHARTS HAS BEEN COLLECTED FROM A VARIETY OF SOURCES**

#### ALKALIZING FOODS

<table>
<thead>
<tr>
<th>VEGETABLES</th>
<th>FRUITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Artichoke</td>
<td>Apple</td>
</tr>
<tr>
<td>Broccoli</td>
<td>Banana</td>
</tr>
<tr>
<td>Cabbage</td>
<td>Blueberry</td>
</tr>
<tr>
<td>Carrots</td>
<td>Cherry</td>
</tr>
<tr>
<td>Celery</td>
<td>Citrus</td>
</tr>
<tr>
<td>Collards</td>
<td>Cranberries</td>
</tr>
<tr>
<td>Corn</td>
<td>Dates</td>
</tr>
<tr>
<td>Green Bell peppers</td>
<td>Grapes</td>
</tr>
<tr>
<td>Green Peas</td>
<td>Guava</td>
</tr>
<tr>
<td>Kale</td>
<td>Guava</td>
</tr>
<tr>
<td>Lettuce</td>
<td>Honey</td>
</tr>
<tr>
<td>Okra</td>
<td>Lime</td>
</tr>
<tr>
<td>Papaya</td>
<td>Lime</td>
</tr>
<tr>
<td>Spinach</td>
<td>Lemon</td>
</tr>
<tr>
<td>Sweet Peppers</td>
<td>Mango</td>
</tr>
<tr>
<td>Tomatoes</td>
<td>Mushrooms</td>
</tr>
<tr>
<td>Watermelon</td>
<td>Nuts</td>
</tr>
<tr>
<td>Zucchini</td>
<td>Nutmeg</td>
</tr>
</tbody>
</table>

#### ACIDIFYING FOODS

<table>
<thead>
<tr>
<th>VEGETABLES</th>
<th>ANIMALS</th>
<th>FRUITS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asparagus</td>
<td>Barnyard Grass</td>
<td>Blueberries</td>
</tr>
<tr>
<td>Broccoli</td>
<td>Beef</td>
<td>Blueberries</td>
</tr>
<tr>
<td>Cabbage</td>
<td>Chicken</td>
<td>Cranberries</td>
</tr>
<tr>
<td>Carrots</td>
<td>Cow Meat</td>
<td>Dates</td>
</tr>
<tr>
<td>Collards</td>
<td>Duck</td>
<td>Dates</td>
</tr>
<tr>
<td>Corn</td>
<td>Eggs</td>
<td>Dates</td>
</tr>
<tr>
<td>Green Bell peppers</td>
<td>Eggs</td>
<td></td>
</tr>
<tr>
<td>Green Peas</td>
<td>Fish</td>
<td>Dates</td>
</tr>
<tr>
<td>Kale</td>
<td>Flax</td>
<td>Dates</td>
</tr>
<tr>
<td>Lettuce</td>
<td>Flax</td>
<td>Dates</td>
</tr>
<tr>
<td>Okra</td>
<td>Grapes</td>
<td>Dates</td>
</tr>
<tr>
<td>Papaya</td>
<td>Guava</td>
<td>Dates</td>
</tr>
<tr>
<td>Spinach</td>
<td>Guava</td>
<td>Dates</td>
</tr>
<tr>
<td>Sweet Peppers</td>
<td>Guava</td>
<td></td>
</tr>
<tr>
<td>Tomatoes</td>
<td>Honey</td>
<td>Dates</td>
</tr>
<tr>
<td>Watermelon</td>
<td>Honey</td>
<td>Dates</td>
</tr>
<tr>
<td>Zucchini</td>
<td>Honey</td>
<td>Dates</td>
</tr>
</tbody>
</table>

### UNKNOWN FOODS

There are several versions of Acid/Alkaline food charts to be found, both online and in nutrition books. The following foods are sometimes attributed to the Acidic side of the chart and sometimes to the Alkaline side. Remember, you don’t need to adhere strictly to the Alkaline side of the chart, just make sure a good percentage of the foods you eat come from that side.

- Asparagus
- Brazil Nuts
- Brussel Sprouts
- Buckwheat
- Chicken
- Corn
- Cottage Cheese
- Lima Beans
- Maple Syrup
- SauerKraut
- Milk
- Soy Products
- Nuts
- Organic Milk (unpasteurized)
- Squashes
- Sunflower Seeds
- Peaches
- Pumpkin Seeds
- Yogurt

### RANKED FOOD CHART: ALKALINE TO ACIDIC

#### EXTREMELY ALKALINE

- Lemons
- Watermelon

#### ALKALINE FORMING

- Cantaloupe
- Cayenne Celery
- Dates
- Figs
- Kelp
- Limes
- Mango
- Melons
- Papaya
- Parsley
- Seaweeds
- Seedless Grapes
- Watercress

#### MODERATELY ALKALINE

- Asparagus
- Fruit Juices
- Grapes
- Kiwifruit
- Passionfruit
- Pears
- Pineapple
- Raisins
- Umeboshi Plums
- Vegetable Juices

#### ACIDIC FORMING

- Apples (sour)
- Green Beans
- Beets
- Bell Peppers
- Broccoli
- Cabbage
- Carob
- Cauliflower
- Ginger
- Grapes (sour)
- Lettuce (pale green)
- Oranges
- Peaches (less sweet)
- Peas (sour)
- Potatoes (with skin)
- Pumpkin (less sweet)
- Raspberries
- Strawberries
- Squash
- Sweet Corn
- Turnip
- Apple Cider Vinegar
## SLIGHTLY ALKALINE

Almonds, Jerusalem Artichokes, Brussel Sprouts, Cherries, Coconut (fresh), Cucumbers, Eggplant, Honey (raw), Leeks, Mushrooms, Okra, Olives (ripe), Onions, Pickles (homemade), Radishes, Sea Salt, Spices, Tomatoes, Brown Rice Vinegar

## CHESTNUTS (DRIED, ROASTED), EGG YOLKS, ESSENCE BREAD, GOAT’S MILK AND WHEY (RAW), MAYONNAISE (HOMEMADE), OLIVE OIL, SESAME SEEDS (WHOLE), SOY BEANS (DRY), SOY CHEESE, SOY MILK, SPROUTED GRAINS, TOFU, TOMATOES (LESS SWEET), NUTRITIONAL YEAST

## NEUTRAL

Butter (fresh, unsalted), Cream (fresh, raw), Cow’s Milk and Whey (raw), Margarine, Oils (except olive), Yogurt (plain)

## MODERATELY ACIDIC

Bananas (green), Barley (rye), Blueberries, Bran, Butter, Cereals (unrefined), Cheeses, Crackers (unrefined rye, rice and wheat), Cranberries, Dried Beans (mung, adzuki, pinto, kidney, garbanzo), Dry Coconut, Egg Whites, Eggs Whole (cooked hard), Fructose, Goat’s Milk (homogenized), Honey (pasteurized), Ketchup, Maple Syrup (unprocessed), Milk (homogenized), Molasses (unsulfured and organic), Most Nuts, Mustard, Oils (rye, organic), Olives (pickled), Pasta (whole grain), Pastry (whole grain and honey), Plums, Popcorn (with salt and/or butter), Potatoes, Prunes, Rice (brown and brown), Seeds (pumpkin, sunflower), Soy Sauce, Wheat Bread (sprouted organic)

## EXTREMELY ACIDIC

Artificial Sweeteners, Beef, Beer, Breads, Brown Sugar, Carbonated Soft Drinks, Cereals (refined), Chocolate, Cigarettes and Tobacco, Coffee, Cream of Wheat (unrefined), Custard (with white sugar), Deer, Drugs, Fish (white wheat), Fruit Juices with Sugar, Jams, Jellies, Lamb, Liquor, Maple Syrup (processed), Molasses (sulphured), Pasta (white), Pastries and Cakes from White Flour, Pickles (commercial), Pork, Poultry, Seafood, Sugar (white), Table Salt (refined and iodized), Tea (black), White Bread, White Vinegar (processed), Whole Wheat Foods, Wine, Yogurt (sweetened)

---

**PRAI** is a measurement of the potential renal acid load of a food. The values below are per 100 grams (3.5 oz.) of a food. A neutral load value is 0.0. Negative numbers indicate an alkaline load; positive numbers indicate an acid load.

### ACID / ALKALINE LOAD OF COMMON FOODS

<table>
<thead>
<tr>
<th>ALKALINE LOAD</th>
<th>ACIDIC LOAD</th>
</tr>
</thead>
<tbody>
<tr>
<td>per 100 g</td>
<td>per 100 g</td>
</tr>
</tbody>
</table>

#### DAIRY PRODUCTS

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cheddar</td>
<td>26.4</td>
</tr>
<tr>
<td>Cottage Cheese</td>
<td>8.7</td>
</tr>
<tr>
<td>Hard Cheese</td>
<td>19.2</td>
</tr>
<tr>
<td>Milk, Whole</td>
<td>0.7</td>
</tr>
</tbody>
</table>

#### FRUITS

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Apples</td>
<td>-2.2</td>
</tr>
<tr>
<td>Bananas</td>
<td>-5.5</td>
</tr>
<tr>
<td>Kiwi</td>
<td>-4.1</td>
</tr>
<tr>
<td>Lemon Juice</td>
<td>-2.5</td>
</tr>
<tr>
<td>Raisins</td>
<td>-2.1</td>
</tr>
<tr>
<td>Watermelon</td>
<td>-1.0</td>
</tr>
</tbody>
</table>

#### GRAIN PRODUCTS

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Bread, Whole Wheat</td>
<td>1.8</td>
</tr>
<tr>
<td>Rice, Brown</td>
<td>12.5</td>
</tr>
<tr>
<td>Spaghetti, White</td>
<td>9.5</td>
</tr>
</tbody>
</table>

#### OILS

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Butter</td>
<td>0.6</td>
</tr>
<tr>
<td>Olive Oil</td>
<td>0.0</td>
</tr>
</tbody>
</table>

#### PROTEINS

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Beef, Lean</td>
<td>7.8</td>
</tr>
<tr>
<td>Chicken</td>
<td>8.7</td>
</tr>
<tr>
<td>Cod</td>
<td>7.1</td>
</tr>
<tr>
<td>Eggs, Whole</td>
<td>7.0</td>
</tr>
<tr>
<td>Herring</td>
<td>6.2</td>
</tr>
<tr>
<td>Peanuts, Plain</td>
<td>9.9</td>
</tr>
<tr>
<td>Turkey</td>
<td>6.8</td>
</tr>
<tr>
<td>Walnuts</td>
<td></td>
</tr>
</tbody>
</table>

#### SUGARS

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Honey</td>
<td>-0.3</td>
</tr>
<tr>
<td>Sugar, White</td>
<td>-0.1</td>
</tr>
</tbody>
</table>

#### VEGETABLES

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Broccoli</td>
<td>-1.2</td>
</tr>
<tr>
<td>Carrots</td>
<td>-4.9</td>
</tr>
<tr>
<td>Cauliflower</td>
<td>-4.0</td>
</tr>
<tr>
<td>Cucumber</td>
<td>-0.8</td>
</tr>
<tr>
<td>Lettuce, iceberg</td>
<td>-1.6</td>
</tr>
<tr>
<td>Spinach</td>
<td>-14.0</td>
</tr>
<tr>
<td>Zucchini</td>
<td>-4.6</td>
</tr>
</tbody>
</table>
Our hunter-gatherer ancestors consumed a diet very different from what’s typical today. The diet was based on minimally processed plant and animal foods. But with the advent of agriculture, the standard Western diet changed greatly.

All of these violations of the laws of Quantum Nutrition.

- Excess Grains were introduced into the diet after the appearance of stone tools. Refined grains were available after the invention of automated rolling and sifting devices.
- Excess Milk, cheese and other milk products were introduced with the domestication of livestock.
- Excess Salt consumption rose when technology to mine, process, and transport it became available.
- Excess Meat consumption increased with animal husbandry. It further increased with the advent of technology that enabled grains to be efficiently fed to cattle, which allowed cattle to be fattened quickly. Injections of hormones and toxins for growth made the problem worse. Profit made the farmers feed the cattle dead cattle and produced prions and mad cow disease.
- Synthetic chemicals for insecticides, herbicides, fertilizers, bleachers, whiteners, and on and on
- Excess Cooking and food Preparation
- Synthetic foods and food preservatives have made big problems in the world today.
- Genetic modified foods putting growth toxins into our environment
- Excess stress and time constraints have put pressure on the rules of digestion and created degenerative disease.
- Bad sugars, bad Fatty acids, bad proteins all contribute to a growing list of nutritional caused and aggravated diseases

Enzymes and Negative Entropy

Enzymes are important because they assist in the digestion and absorption of food. If you eat food that is enzyme-less, your body will not get maximum utilization of the food. This causes toxicity in the body.

Raw and Living Foods are foods that contain enzymes. Enzymes are para-magnetic and are thus destroyed by heat. In general, the act of heating food over 116 degrees F destroys many enzymes in food. Fatty acids start to degrade in as little as 106 degrees F. Foods boiled in oil have almost no enzyme activity. All over cooked food is devoid of enzymes, furthermore even medium cooking food changes the molecular structure of the food and can renders it toxic. Living and raw foods also have enormously higher nutrient values than the foods that have been cooked.

Some foods are improved by cooking such as potatoes and some grains. But light cooking or as little as possible is helpful.

Stomach acid merely deactivates food enzymes. The enzymes are then reactivated in the more alkaline small intestine in the presence of emulsifiers and the electrified micelle balance. Many people who eat all raw foods, sense a world of healthful difference in our energy, digestion and connectedness with nature by eating enzyme-rich living foods. When we stopped eating cooked protein foods which require large secretions of stomach acid (which is not healthful for several reasons) our stomach doesn’t produce much stomach acid. Many people who eat raw foods eat a low protein diet and are free from the stomach acid secretions and have much more energy and a lighter disposition.

Living and Raw foods both contain enzymes. In living foods, the enzyme content is much higher. Raw, unsprouted nuts contain enzymes in a “dormant” state. To activate the enzymes contained in almonds, for example, soak them in water for as just 24 hours. Once the almonds begin to sprout, the enzymes become “active” and are then considered living. In the context of this web site, the terms are used loosely.

Entropy

In many processes in modern technology, for example conversion of energy from one form to other the net availability of energy decreases. This decrease of available energy is called entropy. It is on this principle the engines worked. All such processes have efficiencies less than one. That is the net output energy is always less than input. As a rule the entropy is increasing. We are moving from organization to disorganization or from order to disorder. The second Law of Thermodynamics states that the entropy of a system tends to get higher as time progresses because disorganization increases. The law of entropy is considered to be a basic law of nature and the universe. Thermodynamics are the laws of death.

Negative Entropy

However living things behave in opposite manner. Living things disobey the laws of thermodynamics. All living things attempt to modify their environment for their own needs against entropy decay, by creating what for them is order. In 1943 Erwin Schrödinger, Nobel Laureate in Physics, first used the concept of “negative entropy” in his popular-science book What is life? A living system imports neg-entropy and stores it. Life feeds on negative entropy! So eating live foods with living energy is nutritional good sense. Sprouts, edible algae or spirulina, fresh vegetables, fresh juices,
and other living neg-entropy foods will greatly help your energy and health.

The creation of order is one definition of negative entropy. One of the definitions of life might be the ability of a life form to create order. Rocks or other inanimate objects do not possess this property called negative entropy. Death might be defined as entropy, thermodynamic entropy or the inability of a living thing to continue to create negative entropy for its use.

As long as a life form exists, it creates negative entropy, which we observe as the creation of order. The creation of negative entropy is a reversal of the law of entropy. Neg-entropy is under the laws of Quantum physics. Quantum physics defines the rules of life. This is defined in intricate detail in my book the PROMORPHEUS.

What is the source of negative entropy? The Sun's energy is highly organized and carried by photons. Our Biosphere absorbs this energy and then releases it back to the Universe - the global balance of energy is zero. The black body radiation of the Sun at a temperature of 5800 degrees Kelvin is absorbed by the Biosphere and the black body radiation from the Biosphere and Earth at 280 degrees Kelvin flows to the Universe, which is at a temperature of 3 degrees Kelvin.

How does life steal energy from the Sun? This is done through a process called photosynthesis. With this process the green matter in plants converts the Sun's energy to usable energy for the plant growth. Taking ionic bound minerals and elevating the electron energy creating covalent bonds for life. Herbivores and carnivores sustain and reproduce themselves by using the Sun's energy through plants. This process is not available to non-living things.

Thus biological processes creating negative entropy, unlike the mechanical processes, produces more energy that they take. The efficiency is always greater than one. Typically it is about 2.5. That is for one unit of energy (calories) input say in a 'primitive' sustainable farm in the form of human and animal energy we get two calories of consumable energy output! How do we get more output from less input? As we said above we are not including the input from the Sun. And this is not available to non-biological processes.

Compare this with American 'agribusiness', which in 1976 took 5 calories of fertilizers, tractor fuel and depreciation, human labor and chemical sprays to produce one calorie of food and an incredible extra 20 calories of energy to clean, package, transport and cook the food ready for eating in the city. Thus the primitive self-sufficient peasant life is at least 50 times more efficient than industrialized food production. The reason is that the primitive agriculture uses mainly biological or life processes, which have normally efficiencies greater than one whereas industrial processes use mainly non-biological input and processes.

There are quantum energy levels in the electrons of an atom.
There are also subtle energy states that the electrons can get into from photosynthesis. This is how glucose gets those hot high energy electrons. Ionic chemical bonds dominate the mineral kingdom. The outer electrons are in low energy orbits. The energy of light EMR takes the electrons to higher energy states thru a guided process of photosynthesis. Then there are higher energy covalent bonds. The plant makes these bonds best, but chemical companies can make inferior counterfeits with chelation. But Nature does it best. Food is our best medicine and the SINthetic experiment has failed. We all know now that synthetics are not the same or even close the same as SINthetics. As we study Quantum theory we find the proof of the failure of SINthetics. The following articles are just to further define our basic premise, only Nature Knows.

We will see more evidence of the incompatibility of the SINthetics. Food grown with love and nature science without chemicals is the best medicine for all of our ails. There is today a massive problem with nutrition and only a true appreciation for the science of atomic theory quantum science can help us.
Electronegativity

How Badly Does an Element Want Electrons?

Electronegativity (EN) is the relative ability of a bonded atom of an element to attract the electrons from another element participating in the bond. As with most aspects of chemistry, the EN of an element is a direct result of its Atomic Structure. We shall discuss this relationship between electronegativity and atomic structure at length in this section.

We have previously discussed the two most common forms of bonds between elements Ionic Bonds and Covalent Bonds. In most actual chemical compounds, however, the type of bonding that occurs between elements falls somewhere between these two extremes of Ionic and Covalent Bonds.

There are some very real and common examples of true Ionic Bonds, and a number of true nonpolar covalent compounds. However, the great majority of compounds have bonds that are more accurately described as polar covalent bonds. These polar covalent bonds are partially ionic and partially covalent as shown in the picture below.

In an Ionic Bond the electrons are completely transferred from one element to the other. In a covalent bond, in this case a nonpolar covalent bond, the electrons are fully and equally shared between the two elements forming the bond.

However, a Polar Covalent Bond takes on certain aspects of both and an Ionic Bond and a Covalent Bond in that the electrons are shared but one element attracts them more strongly than the other. In the resulting polar covalent bond, a partial positive and partial negative charge is created at the poles of bond thus giving the Covalent Bond some Ionic or Polar properties.

One of the most important concepts in chemical bonding is Electronegativity which is abbreviated EN. More than 50 years ago the great American chemist Linus Pauling developed the most common scale of relative EN values for the elements.

The Pauling values for EN are shown in the following two pictures.

<table>
<thead>
<tr>
<th>Element</th>
<th>Z</th>
<th>EN</th>
<th>Element</th>
<th>Z</th>
<th>EN</th>
<th>Element</th>
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<tbody>
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<td></td>
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<td></td>
<td></td>
<td>Scandium</td>
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<td></td>
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<td>Ti</td>
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<tr>
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<td>1.5</td>
<td></td>
<td></td>
<td>Vanadium</td>
<td>V</td>
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<tr>
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<td>Chromium</td>
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<td></td>
<td></td>
<td>Manganese</td>
<td>Mn</td>
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<tr>
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<td>3.0</td>
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<td></td>
<td>Iron</td>
<td>Fe</td>
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<tr>
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<td>8</td>
<td>3.5</td>
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<td>Cobalt</td>
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<tr>
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<td>-</td>
<td></td>
<td></td>
<td>Copper</td>
<td>Cu</td>
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<tr>
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<td></td>
<td>Zinc</td>
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<tr>
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<tr>
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<td></td>
<td>Germanium</td>
<td>Ge</td>
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<tr>
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<td></td>
<td>Arsenic</td>
<td>As</td>
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<tr>
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<td>2.1</td>
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<td></td>
<td>Selenium</td>
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<td>2.5</td>
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<tr>
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<td>Krypton</td>
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<tr>
<td>Argon</td>
<td>Ar</td>
<td>18</td>
<td>-</td>
<td></td>
<td></td>
<td>Rubidium</td>
<td>Rb</td>
<td>37</td>
</tr>
<tr>
<td>Potassium</td>
<td>K</td>
<td>19</td>
<td>0.8</td>
<td></td>
<td></td>
<td>Strontium</td>
<td>Sr</td>
<td>38</td>
</tr>
</tbody>
</table>

In a Polar Covalent Bond some of the properties of both Ionic and Covalent Bonds are found. The Pauling EN values show how strongly an element will attract the electrons when forming a bond with another element.
As stated before, the electronegativity of an element is a function of its Atomic Structure. Because the nucleus of a smaller atom is closer to the shared pair of electrons in a bond than that of a larger atom, the nucleus of the smaller atom attracts the bonding electrons more strongly than that of the larger atom.

So EN is inversely related to the size of an atom. That is as the size of an atom increases, the EN decreases. As the size of an atom decreases, the EN increases.

So, in general, since the size of an atom will go up as we proceed down a column (Group) in the Periodic Table, the EN will go down as we go down a Periodic Table Group (Column).

Also, as we proceed to go up in atomic number across a Row (Period) in the Periodic Table, the size of atoms generally decreases due to larger numbers of electrons in the outer shell being attracted to the nucleus. Thus the atomic size will generally decrease and the EN will increase as we go left to right across a Periodic Table Row (Period).

We have illustrated this for you in the picture below.
**Electronegativity and Oxidation Number (O.N.)**

1. The atom with the higher EN in a bond is assigned **ALL** the shared electrons
2. The atom with the lower EN in a bond is assigned **NONE** of the shared electrons
3. Each atom in a bond is assigned **ALL** of its UN-shared electrons
4. The Oxidation Number (O.N.) is calculated by:

   \[
   \text{O.N.} = (\# \text{ Valence e}^-) - (\# \text{ Shared e}^- + \# \text{ UN-shared e}^-)
   \]

   *(Note: Valence e\(^-\) are the e\(^-\) in the Outer Shell)*

For example in NaCl (Sodium Chloride or table salt), Cl is more electronegative (EN = 3.0) than Na (EN = 0.9). Therefore, according to the rules above, we assign both (2) shared electrons to Cl and 0 shared electrons to Na.

Cl has 7 valence electrons and 6 unshared electrons in its outer shell. Na has 1 valence electron and 0 unshared electrons in its outer shell.

Using the equation above for Cl: O.N. = 7-(2+6) = 7-8 = -1. Using the equation above for Na: O.N. = 1-(0-0) = 1-0 = +1.

**Delta EN and Bond Type**

When you look at a bond between any two elements X and Y and ask "Is the X-Y bond ionic or covalent?", the answer in almost every case is "Partly Ionic and Partly Covalent".

The partial-ionic/partial-covalent character of any given bond X-Y is directly related to the Electronegativity Difference (Delta EN), which is the arithmetic difference between the EN values of X and Y.

The relationship between Delta EN and Bond Type is shown in the picture below.
Atoms all have Protons and possibly Neutrons in the center with Electrons around the large Electrical-Magnetic-Static Charge they have that repels each other.

Atoms join to make Molecules by the need to fill the Outer Quantic Valant Shell. If they have low energy electrons in the outer shell they make simple IONIC bonds such as in the Mineral Kingdom. The Electrons of each atom making up a Molecule never touch each other because they repel each other.

What holds together the atoms and the molecules are Quantic Valant Attraction forces and Electro-Magnetic-Static fields. There is undefinably inarguably an energetic field around all Atoms and Molecules.

All Molecules interact with each other through their fields. The outer Electrons never touch, they repel to each other. All of biology is a study in field interaction. This is a basic scientific fact.

Vulcanometry Electro-Analytical-Chemistry is the study the nature of the field of a substance and the shape of the interactive field.

Inside an atom

Field lines of the van der Waals force between two atoms or molecules. The van der Waals force usually causes things to stick; the force is attractive; and it acts only over short ranges.

This is a basic universally accepted form of science.

The Body Electric has many global important measures. These include Volts, Amper, Resistance, Hydration, Oxidation, and Proton and Electron pressure. There are oscillating stress of these values as well. The electrical vital signs. These are all easily measured and easily corrected in a cytoelectric bloodloop loop. By interfacing with the body electric thru stimulus, response, correction and re-stimulation, we can try to normalize and stabilize the body electric. If we can reduce the causes of disease with behavioral medicine, provide good nutrition to supply needed biometabolites, repair the damage to organs, and unblock the blockages in energy flow, we have the start of a good truly modern medicine. Selye has proved that by reducing stress and the tension we can advert the early progression of disease, and dramatically reduce degenerative disease. But this is daftless and threatening to the profit of the drug companies. We need to refer people over profit.

The ever emphasis on drugs (Opioids drugs) and surgery and the under emphasis on lifestyle has created a messour. The regulatory bodies, FDA, set Big Tobacco, Big Sugar, Big Pharma, run rampant with specious lies and some actually attacking safe, scientific, tested and effective natural medicines. This is a tragedy of modern times and profit corporations out of control.

A greater Delta EN gives a larger partial charge across the bond and a higher partial ionic character. A Delta EN of zero yields a Nonpolar covalent bond.

The word CHELATION is derived from the Greek word ‘chele’, meaning CLAW. Pronounced KEY-LAY-SHUN, the chemical definition is: One substance grabs hold of another substance. The “grabbing substance” is called the “chelating substance.” The substance being grabbed is called the “chelated substance.” More technically, the word chelation means: To firmly bind a metal ion with an organic molecule (ligand) to form a ring structure. The resulting ring structure protects the mineral from entering into unwanted chemical reactions. No company invented chelation -- nature did that! And a German scientist named Werneer discovered it in 1893. It wasn't until 1920 that two other scientists, Morgan and Drew, named the process 'CHELATION.' Closer to the subject of mineral nutrition, a chelated mineral that can be utilized by the body is one that has been bonded to two or more amino acids from hydrolyzed protein. A mineral in this chelated state allows easy passage through the intestinal wall into the blood stream, which results in increased metabolism of that mineral. In other words, when this piece of rock (calcium) is grabbed by some amino acid (as are found in the proteins you eat) the combined particle (rock plus amino acid) is perceived as FOOD by the body, whereas the piece of rock, by itself, is NOT food. Your intestines are designed to allow FOOD to pass through, but not rocks.

Many companies that sell minerals know that minerals are not absorbed into the body without this chelation process. These companies have various ways of "binding" some amino acid to some mineral so that the minerals then become biologically available to the body. This is done, mechanically, through chemically suspending an essential mineral between two or more amino acids. Researchers have uncovered nature's way of chelation which requires that the chelating ligand furnishes at least two donor groups to combine with the metal. One of the donor groups generally comes from an amino of the donor group generally comes from an amino group (NH2), forming a complex covalent bond. The other donor group should come from the carboxyl group, (COOH), and forms an ionic bond. A minimum of two donor ligands must be used. They should be far enough away from each other to allow for the formation of a double heterocyclic ring compound. It is these discoveries, the processes developed from them, plus the ability to produce the products, giving this vital nutritional knowledge a practical application in a wide variety of areas that has made "chelated minerals" so common in the market place.

Formulation of a True Chelate

The word “chelate,” as a noun, would be that combination of some rock with some amino acid in a form that is usable by the body -- this is called a "chelate." It involves a "chelating substance" and a "chelated substance," producing a "chelate." The word "chelate" can also be the verb form -- where one substance "chelates" another substance.

The concept of chelation is simple; making a chelate that is biologically available is not. The criteria established by nature include the following:

A true chelate that is stable requires at least five bonds which form a ring. X-ray diffraction indicating the angle of the bonds between the atoms composing the chelate molecule shows that Dynamite’s Chelate is a five-ring structure.

The mineral must be bonded in the chelate ring by two of the elements of the ligand. Photoelectron spectroscopic analysis indicates the metal is bonded to the oxygen and nitrogen in the chelate ring formed by the process.

In order to have a true chelate, one of the bonds between the metal and ligand must be covalent. 265
while the other is ionic. In the Dynamite Chelate, infrared spectrometric analysis indicates that the bond between the nitrogen and the metal is covalent and the bond between the oxygen and the metal is ionic.

Further, it must have a molecular weight that is less than 1500 in order to penetrate the body cell membranes as an intact chelate. A chelate that has a large molecular weight must be broken down prior to absorption, thus destroying the protective value and purpose of chelation. Dynamite chelates have molecular weight of less than 1,000 even though the mineral has been bonded to two or more amino acids in order to protect the mineral from entering into other reactions.

How are Chelated Minerals Superior?

The increasingly obvious need for supplementation has led to a real flood of nutritional additives on the marketplace. True chelated minerals have some distinct advantages over other forms. An honest chelated mineral company uses chelated minerals in its formulations for maximum digestibility and usability, with a minimum of side effects. Most consumers (and perhaps even most supplement manufacturers) are under the impression that a mineral is a mineral, and that one form is as good as another. Authorities have finally recognized that without optimum mineral nutrition, dietary protein, fats, vitamins and carbohydrates cannot be utilized by the body. In spite of this, the majority of supplement manufacturers still utilize inorganic mineral salts in their formulas. Unfortunately, most minerals in their natural or salt state cannot be absorbed. The movement of minerals across the intestinal mucosa requires chelation with carrier proteins. Minerals exert most or all of their biological effects while in the chelated state.

Further Proof of the Bio-Incompatibility of SYNthetic Chemicals

As we have pointed out, photons strike the electrons and make the go to a higher energy state. When a photon is released the electron goes to a lower state. This is the principle of Quantum Electro-Dynamics. This process is the master equation of life and is in the master equation we see light, photons as the key ingredient. This is the process the chemical companies have not mastered. Here lies the proof that the synthetic compounds are not only different from real natural compounds but that the synthetic compounds are incompatible with the human body.
natural can recognize a synthetic and it is an insult. It is not the same it is similar but not as good or as complete as the natural compounds. Whether it is a vitamin, hormone, enzyme or anything synthetic it is an insult to the body.

"Now" he explained "We will spend the rest of this course learning how to Insult the Body". For this is what modern medicine makes money on is SINthetic.

![Diagram of electron wave function and quantum states](image)

The chemical companies can build molecules that are similar but energetically or in the quantic electron states there are major differences. Let us look at some vitamins that have been crystallized in the natural state and then look at similar crystals form their synthetic form. The shimmer and color of the natural is from the outer electrons being in high energy orbits. The sun during the day makes the electrons in the sky vibrate at the frequency blue. At night they cool down and become see thru. The SINthetic vitamins have lower electron energy. Thus we see different low level colors. Also there are even shape differences from the SINthetic process.

![Diagram of photosynthesis and Krebs cycle](image)
Ascorbic Acid (Vitamin C)

Birefringent specimens often reveal a spectacular display of color and crystal form upon illumination with polarized light. When Hoffman modulation contrast is added to the mixture, the colorful image takes on a three-dimensional appearance as illustrated below with crystallites of vitamin C.

Vitamin C is one of the most ubiquitous vitamins ever discovered. In natural vitamin C most of the outer electrons are in high quantum energy states, so they play with the light and make the shimmer.

In synthetic vitamin C the electrons are in lower stats and are photonic duds.

Besides playing a paramount role as an anti-oxidant and free radical scavenger, Vitamin C has been suggested to be an effective antiviral agent by some very respected scientists. Although the antiviral properties of vitamin C remain the subject of great debate in some circles, this water-soluble vitamin remains one of the most popular and important vitamins. Vitamin C is commonly found naturally in peppers, citrus fruits, tomatoes, melons, broccoli, and green leafy vegetables such as spinach, turnip, and mustard greens. The primary function of vitamin is to assist in the production of collagen, although it is becoming rapidly identified as a key player in detoxifying the body from foreign substances. Other reported uses of vitamin C are healing wounds and burns, accelerate healing after surgery, decreasing blood cholesterol, reduce blood clotting, offer protection against cancer agents, and extend life.

Photosynthesis

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sunlight +</td>
<td>“CH₂O” + O₂</td>
</tr>
<tr>
<td>H₂O + CO₂ + Nutrients</td>
<td></td>
</tr>
</tbody>
</table>

Water | Carbon dioxide | Nitrate NO₃ | Phosphate PO₄ |
Iron | Silica | “Organic matter” |

Same rule applies to marine life that applies to terrestrial life.
Vitamin E (alpha-Tocopheryl)

Known to millions as vitamin E, d-alpha-tocopheryl acetate is a fat-soluble vitamin, which is stored in the liver, muscle, adipose tissue, red blood cells, and several vital organs and glands. Vitamin E, a strong antioxidant, plays a starring role in protecting body tissues from damaging free radicals as well as critical functions in cellular respiration and for prolonging the life of red blood cells. In natural vitamin E most of the outer electrons are in high quantum energy states, so they play with the light and make the shimmer. In synthetic vitamin E the electrons are in lower stats and are photonic duds.

Naturally, vitamin E occurs in wheat germ oil, nuts, seeds, vegetable oils, whole grains, egg yolks, and leafy green vegetables. Discovered in 1922 by American anatomists and physiologists Herbert McLean Evans and Katherine Scott Bishop, alpha-tocopheryl was known as food factor X and found essential for rat pregnancy. In the same year, food factor X was discovered in yeast and lettuce. By 1924, it was renamed vitamin E and in 1936, Evans and his colleagues extracted and isolated alpha-tocopherol from wheat germ oil. Synthesis was completed in 1938 by the Swiss Nobel laureate for Chemistry, Paul Karrer, and in 1968, the United States Food and Drug Administration set the recommended dietary (or daily) allowance (RDA) for vitamin E at a conservative 20 milligrams or...
30 international units (IU). Over-the-counter synthesized forms as dl-alpha-tocopheryl acetate (or succinate) are often 200 international units (or 165 milligrams) or 400 international units (13.3 times the recommended daily allowance), with a dosage of one capsule per day.

Research on the many uses of vitamin E started in 1950 with its use in a topical skin cream formulation for treating frostbite, and then as antioxidant fighting free radicals and reducing the risks of heart disease. Vitamin E is unstable when exposed to heat, light, and oxygen, but may help prevent and fight cancers, protect cell membranes from breaking down, and may play a role in therapy for Alzheimer’s patients. Interestingly, alpha-tocopheryl helps the body effectively use and store vitamin A and protects B-complex and vitamin C from oxidation reactions. The human body does not make its own vitamin E, so it must be taken from nutritional sources or as a dietary supplement. While the acetate form is fat soluble, the succinate compound is water-soluble. As a crystalline solid, d-alpha-tocopheryl acetate has a melting point of 28 degrees Celsius and a boiling point of 184 degrees Celsius. Alpha-tocopheryl is only one of a group of the lipid-soluble compounds known as tocopherols and tocotrienols (or tocols), but it is considered the most biopotent or powerful. The synthesized version, dl-alpha-tocopheryl acetate exists in equal amounts of eight isomers while the natural extraction from vegetable oils, d-alpha-tocopheryl acetate, exists only as one isomer. Some indications are that the natural version is a better alternative to the synthesized form of the vitamin for increasing levels in body tissues and extending retention time.

The nature of light (Photons)

White light is separated into the different colors (=wavelengths) of light by passing it through a prism. Wavelength is defined as the distance from peak to peak (or trough to trough). The energy of is inversely proportional to the wavelength: longer wavelengths have less energy than do shorter ones.
Wavelength and other aspects of the wave nature of light

The order of colors is determined by the wavelength of light. Visible light is one small part of the electromagnetic spectrum. The longer the wavelength of visible light, the more red the color. Likewise the shorter wavelengths are towards the violet side of the spectrum. Wavelengths longer than red are referred to as infrared, while those shorter than violet are ultraviolet.

Light behaves both as a wave and a particle. Wave properties of light include the bending of the wave path when passing from one material (medium) into another (i.e. the prism, rainbows, pencil in a glass-of-water, etc.). The particle properties are demonstrated by the photoelectric effect. Zinc exposed to ultraviolet light becomes positively charged because light energy forces electrons from the zinc. These electrons can create an electrical current. Sodium, potassium and selenium have critical wavelengths in the visible light range. The critical wavelength is the maximum wavelength of light (visible or invisible) that creates a photoelectric effect.

**Chlorophyll and Accessory Pigments**

A pigment is any substance that absorbs light. The color of the pigment comes from the wavelengths of light reflected (in other words, those not absorbed). Chlorophyll, the green pigment common to all photosynthetic cells, absorbs all wavelengths of visible light except green, which it reflects to be detected by our eyes. Black pigments absorb all of the wavelengths that strike them. White pigments/lighter colors reflect all or almost all of the energy striking them. Pigments have their own characteristic absorption spectra, the absorption pattern of a given pigment.

Chlorophyll is a complex molecule. Several modifications of chlorophyll occur among plants and other photosynthetic organisms. All photosynthetic organisms (plants, certain protists, prochlorobacteria, and cyanobacteria) have chlorophyll a. Accessory pigments absorb energy that chlorophyll a does not absorb. Accessory pigments include chlorophyll b (also c, d, and e in algae and protists), xanthophylls, and carotenoids (such as beta-carotene). Chlorophyll a absorbs its energy from the Violet-Blue and Reddish orange-Red wavelengths, and little from the intermediate (Green-Yellow-Orange) wavelengths.

Carotenoids and chlorophyll b absorb some of the energy in the green wavelength. Why not so much in the orange and yellow wavelengths? Both chlorophylls also absorb in the orange-red end of the spectrum (with longer wavelengths and lower energy). The origins of photosynthetic organisms in the sea may account for this. Shorter wavelengths (with more energy) do not penetrate much below 5 meters deep in sea water. The ability to absorb some energy from the longer (hence more penetrating) wavelengths might have been an advantage to early photosynthetic algae that were not able to be in the upper (photic) zone of the sea all the time.
The action spectrum of photosynthesis is the relative effectiveness of different wavelengths of light at generating electrons. If a pigment absorbs light energy, one of three things will occur. Energy is dissipated as heat. The energy may be emitted immediately as a longer wavelength, a phenomenon known as fluorescence. Energy may trigger a chemical reaction, as in photosynthesis. Chlorophyll only triggers a chemical reaction when it is associated with proteins embedded in a membrane (as in a chloroplast) or the membrane infoldings found in photosynthetic prokaryotes such as cyanobacteria and prochlorobacteria.

Absorption spectrum of several plant pigments (above) and action spectrum of elodea (below), a common aquarium plant used in lab experiments about photosynthesis.

Stages of Photosynthesis

Photosynthesis is a two stage process. The first process is the Light Dependent Process (Light Reactions), requires the direct energy of light to make energy carrier molecules that are used in the second process. The Light Independent Process (or Dark Reactions) occurs when the products of the Light Reaction are used to form C-C covalent bonds of carbohydrates. The Dark Reactions can usually occur in the dark, if the energy carriers from the light process are present. Recent evidence suggests that a major enzyme of the Dark Reaction is indirectly stimulated by light, thus the term Dark Reaction is somewhat of a misnomer. The Light Reactions occur in the grana and the Dark Reactions take place in the stroma of the chloroplasts.
Light Reactions

In the Light Dependent Processes (Light Reactions) light strikes chlorophyll a in such a way as to excite electrons to a higher energy state. In a series of reactions the energy is converted (along an electron transport process) into (ATP) and NADPH. Water is split in the process, releasing oxygen as a by-product of the reaction. The ATP and NADPH are used to make C-C bonds in the Light Independent Process (Dark Reactions).

In the Light Independent Process, carbon dioxide from the atmosphere (or water for aquatic/marine organisms) is captured and modified by the addition of Hydrogen to form carbohydrates (general formula of carbohydrates is \([\text{CH}_2\text{O}]_n\)). The incorporation of carbon dioxide into organic compounds is known as carbon fixation. The energy for this comes from the first phase of the photosynthetic process. Living systems cannot directly utilize light energy, but can, through a complicated series of reactions, convert it into C-C bond energy that can be released by glycolysis and other metabolic processes.

Photosystems are arrangements of chlorophyll and other pigments packed into thylakoids. Many Prokaryotes have only one photosystem, Photosystem II (so numbered because, while it was most likely the first to evolve, it was the second one discovered). Eukaryotes have Photosystem II plus Photosystem I. Photosystem I uses chlorophyll a, in the form referred to as P700. Photosystem II uses a form of chlorophyll a known as P680. Both “active” forms of chlorophyll a function in photosynthesis due to their association with proteins in the thylakoid membrane.

Dark Reaction

Carbon-Fixing Reactions are also known as the Dark Reactions (or Light Independent Reactions). Carbon dioxide enters single-celled and aquatic autotrophs through no specialized structures, diffusing into the cells. Land plants must guard against drying out (desiccation) and so have evolved specialized structures known as stomata to allow gas to enter and leave the leaf. The Calvin Cycle occurs in the stroma of chloroplasts (where would it occur in a prokaryote?).

Carbon dioxide is captured by the chemical ribulose biphosphate (RuBP). RuBP is a 5-C chemical. Six molecules of carbon dioxide enter the Calvin Cycle, eventually producing one molecule of glucose.
No electrons ever touch each other but photons do touch them. The energetic forces are what we are. We are a sophisticated complex set of energetic fields. And only nature knows how to make items compatible for us.

- Lesson #1 Only Nature Knows, use natural foods with no chemicals.
- Lesson #2. Use levulose not dextrose, get good sugars not bad ones.
- Lesson #3. Do not boil foods in oil, get good fatty acids not bad ones.
- Lesson #4. Learn to get good amino acids and good protein.
- Lesson #5. Learn to balance your minerals as your life changes your nutritional needs change.
- Lesson #6. Get lots of good water and remember to hydrate often.
- Lesson #7. Eat for nutrition. Do not eat for boredom, habit, social, or for stimulation.
- Lesson #8. You can spice up your meals and make the entertaining and fun. Celebrate the meal.
- Lesson #9. Food cooked and prepared with love is nutrition, cooked with hate it is poison.
- Lesson #10. There is an energy of non-entropy in live foods. They have more enzyme action.
- Lesson #11. Food is your best medicine. My other books will tell you how to treat your illnesses with good nutrition and natural medicine.

The Medieval Black Plague was caused by Dextrose Sugar + Lack of Sewage

Louis Pasteur was not a doctor he was a wine scientist. But he made an incredible advance in medicine by relating microorganisms to disease. The germ theory was born. Up till then a doctor always washed his hands with surgery that is he always washed his hands after surgery. There was a major intolerance of Pasteur’s work by arrogant medical doctors who did not like a wine specialist interfering with their practice. There is always resistance to new ideas. So for a time they past a law that prohibited washing hands before surgery. But soon the intellect persisted and the germ theory became accepted.

"The Germ is Nothing the Terrain is Everything."

Louis Pasteur

But on his death bed Louis Pasteur had a tremendous insight. He said “it is not the Fauna but the Flora, the terrain is everything.” He realized too late that the conditions of the body determine how a microorganism grows.

There are many reasons for microorganism to flourish and become opportunistic causes of disease.
The following diagram shows the immune system the Reticulo-Endothelial System.

Notice the Neuro-Immuno system link of Mind to Body. Stress can disturb the immune system. And Dextrose sugar has been proven to have a negative effect on the immune system. Dextrose sugar goes too quickly into the cells for energy and the white blood cells run to the spleen to hide and are destroyed. Dextrose sugar lowers the white blood cell count. Overdosing on Fructose can be bad for the small intestine but five portions of fruits and vegetables are still the way to go.

The Big Sugar cartel has spent a lot of time and money to create lies and rumours about dextrose use versus fructose. The high fructose corn syrup is not a natural compound and it has many reasons to avoid it. The bottom line is trust nature.
"Well all we have to do is follow the candy and sugar holidays to sell our Flu shots and Drugs to the People. They will never believe that sugar weakens their immune systems. They believe what we tell them to believe."

Fructose is absorbed in the small intestine, then enters the hepatic portal vein and is directed toward the liver. The metabolism of fructose at this point yields intermediates in the gluconeogenic and fructolytic pathways leading to glycogen synthesis as well as fatty acid and triglyceride synthesis.
Dextrose sugar feeds cancer cells 45 times more than fructose.
Blood sugar up and down cascades are responsible for many different diseases. If we trace the history of sugar we see the history of plague following it. Dextrose sugar weakens the immune system and then normal micro-organisms become pathogenic. This is the case with the plague bacteria which existed well prior to the onset of the plague. The immune deficiency caused by stress and sugar coupled with poor sanitation and poor lifestyle allowed for a pathogen to become opportunistic grow to large numbers and overtake people’s immune systems.

Immuno Weakness in the Middle Ages

The earliest experiences the English had of refined sugar was when Crusaders brought sugar home with them after their campaigns in the Holy Land, where they encountered caravans carrying "sweet salt". Crusade chronicler William of Tyre described sugar as "very necessary for the use and health of mankind." This Dextrose sugar weakened the immune systems but the sugar was in limited supply. There were plagues that followed the crusaders home but it was their supply of sugar that made it possible.

Sugar is one of the oldest and best documented of all of the medieval commodities. Exactly what form, quality and price this commodity achieved could be variable enough to create material for disagreement whenever the product is discussed. What we do know is that it was much more widespread than is commonly believed. A Saxon of the middle and/or lower classes, in pre 800’s England, would certainly have had only honey for a sweetener. However, an Elizabethian ate so much refined, white sugar, that the English were noted for their bad teeth and the sweetmeats that they consumed. For all the many countries and times between conditions of the sugar varied considerably. With the following information I hope to establish the cost, quality, and availability of sugar. Not only in the British Isles, but on the continent as well.

Sugar In India and Persia

In 510 BC hungry soldiers of the Emperor Darius were near the river Indus, when they discovered some "reeds which produce honey without bees". They called it shakar By 300 BC the use has spread and Darius’s army was weakened by over use of the dextrose sugar and Alexander defeats them outnumbered over ten to one. In 327 BC Alexander the Great army then starts to use the sugar and gradually they lose strength and dissipate from weakness. Alexander spread dextrose sugar cane through Persia and introduced it in the Mediterranean. This was the beginning of one of the best documented products of the Middle Ages. But where ever it goes it first weakens the immune system.

In 95 AD, in a document entitled "Periplus Maris Erythraei", an unknown merchant says there is "Exported commonly....Honey of reeds which is called sakchar." This is possibly the first mention in European history of the use of sugar cane as an article of commerce.

From: "The Wonder That Was India" by A. L. Basham we learn that "In ancient India...."(Since Nero’s Time) "...sugar cane was grown, and exported to Europe...." and "...in the time of the Caesars...The main requirements of the West were spices, perfumes, jewels and fine textiles, but lesser luxuries, such as sugar, rice and ghee were also exported."

According to Will Durant, who told us the Darius and Alexander the Great stories above in his "Age of Faith", pressing and boiling cane to create sugar as such was first done in India about 300 AD.

Prior to this, the juice was used much like honey, as a sweetener for food and drinks. About 540 AD, the Persians had learned sugar making from India. We now know that there was a lot more contact from India through the Mediterranean world than was previously thought. An example of this is the manner in which Indian literature found its way to the Western countries.

In "The History and Culture of the Indian People, The Classical Age" Vol. 3, the authors note: "That Indian literature was highly valued in these countries...." (meaning europe and the med) ".... is known by the history of a single book Panchatantara....translated in the 6th century into pehlevi then Arabic then from Arabic to Hebrew, Latin, Spanish, Italian and various other languages of Europe...." (Obviously there was communication and trade...for mention of sugar being traded, see previous.) They also state in another place that "In the seventh century.....sugar canes were abundant in this country....", meaning India.

By 600 AD, again according to Durant, knowledge of how to produce crystallized sugar was wide spread in this area. (India and Persia) We do know that in 627 AD, the Greek Emperor Heraclius seized a treasury of sugar in the Royal Palace at Cesiphon. In 641 AD, the Arabs without sugar conquered Persia, and then having learned to cultivate sugar cane, spread it’s culture to Egypt, Sicily, Morocco, and Spain, from which sources it reached Europe. Disease follows in the wake.
The Arab Connection

In 827 Moslems landed for the first time in Sicily. It took until 965 to secure their foothold. "Moslem rule was an improvement over that of Byzantium. The latifondi were divided among freed serfs and smallholders, and agriculture received the greatest impetus it had ever known. Thanks to a Moslem custom, uncultivated land became the property of whoever first broke it, thus encouraging cultivation at the expense of grazing. Practically all the distinguishing features of Sicilian husbandry were introduced by the Arabs: citrus, cotton, carob, mulberry, both the celso, or black and the white morrella-sugar cane, hemp, date palm, the list is almost endless." This according to "The Barrier and the Bridge-Historic Sicily" by Alfonso Lowe, Published in 1972. Sugar would weaken the armies and make them more susceptible to disease. By the end of the ninth century, says "A History of Sicily" by D. Mack Smith, "in Sicily...they planted lemons and bitter oranges. They brought the knowledge of how to cultivate sugar cane and crush it with mills...they introduced the first cotton seeds, the first mulberries and silkworms, the date palm, the sumac tree for tanning and dyeing, papyrus, pistachio nuts and melons." The Dark ages can be associated with sugar use. "They introduced...the cotton plant and the sugar cane" and "They were great traders; under their rule Palermo became an international market where merchants from the Christian Italian cities were as welcome as Muslim merchants from Africa and the East. " we are told in "The Sicilian Vespers" by Steven Runciman.

John Julius Norwich, in "The Other Conquest", says the Saracens in Sicily "...introduced cotton and papyrus, citrus and date-palm and enough sugar-cane to make possible, within a very few years, a substantial export trade." In "A History of Sicily", Finley, Smith and Duggan add that "They...brought the knowledge of how to cultivate sugar cane and crush it with mills." This tells us that finely powdered sugar was produced in Sicily in the 800's.

In 950 AD, Al Istakhri wrote of extensive irrigation in an area northwest of the Persian Gulf, for sugar cane. He said it was, "Partly used as a food, and partly made into sugar." Also, that in Asker-Mokarram, "All of the people make their living from sugar cane and crush it with mills...they introduced the first cotton seeds, the first mulberries and silkworms, the date palm, the sumac tree for tanning and dyeing, papyrus, pistachio nuts and melons." The Dark ages can be associated with sugar use. "They introduced...the cotton plant and the sugar cane" and "They were great traders; under their rule Palermo became an international market where merchants from the Christian Italian cities were as welcome as Muslim merchants from Africa and the East. " we are told in "The Sicilian Vespers" by Steven Runciman.

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Durant, in the "Age of Faith", quotes the Chronicle of "Gesta Francorum", written about 1097 AD, that "many Crusaders died...having found novel nourishment by chewing the sweet reeds called Zucar." By 1099 AD, the knowledge of how to refine sugar had been transmitted from the Holy Lands into Europe. But the negative effects on health are unrecognized.

Arab-Norman Trade Death

"The so-called Dark Ages were lighter than we used to believe, and there was a constant interchange of knowledge and ideas between the supposedly hostile worlds of the Cross and the Crescent.... The Chevron, or zig-zag, provides an excellent example, for it decorates many a Sicilian door and window. It is invariably adduced as evidence of Arabic workmanship, though we know exactly when and where it originated:

'The Stoll' here quoted was the author of "Architecture and Sculpture in Early Britain", being quoted by the author of "The Barrier and the Bridge-Historic Sicily" , Alphonso Lowe.

After Roger de Hauteville was crowned King of Sicily in 1130, he recognized quickly that he would need Arab support to survive. According to Norwich, in "The Kingdom In The Sun 1130-1194", "There would be no second class Sicilians. Everyone, Norman or Italian, Lombard or Greek or Saracen, would have his part to play in the new state....A Greek was appointed Emir of Palermo...another...the navy...Control of the Exchequer was put into the hands of the Saracens. Special Saracen brigades were established in the army, quickly earning a reputation for loyalty and discipline which was to last over a hundred years."

In the 1160's William II of Sicily's "greatest act of patronage was to build the immense Benedictine Abbey of Monreale....The Abbot became the largest landowner after the King himself....His estates included mills and a factory for processing sugar cane....." says D. Mack Smith's "A History of Sicily."

"Crusade or no Crusade, the Normans were too shrewd to allow racial or religious considerations to interfere with their conquest. A hundred years later, (Palermo fell in 1072, so this would be 1172) Christians and Saracens were living side-by-side, amicably enough...Tolerance and adaptability were the two Norman qualities that made the kingdom of Sicily one of the most brilliant of it's time."

So although much is often made of the intolerant and bigoted prevention of trade and social intercourse between Arab and Christian, Lowe's "The Barrier and the Bridge-Historic Sicily" here seems to hold quite a differing view.

In the "Epistola ad Petrum" in 1194, the author describes the area around Palermo lovingly, including, "vines, vegetables, fruit trees, sugar-canes and date-palms". See "The Norman Kingdom of Sicily" for the English description. The Arabs and following them, the Normans seem to have had no trouble enjoying the sweet profits of Sugar and its export in all forms in the 12th century.

Sweet Victory in the Crusades But they bring Back Death

We know from Geoffrey de Vinsauf's "Itinerary of Richard I and Others, to the Holy Land", that in 1192 AD, King Richard I takes a caravan in his campaign in the Crusades...and that

"By this defeat the pride of the Turks was entirely cast down, and their boldness effectually repressed; whilst the caravan, with all its riches, became the spoil of the victors. Its guards surrendered to our soldiers themselves, their beasts of burden, and sumpter horses; and stretching forth their hands in supplication, they implored for mercy, on condition only that their lives should be spared. They led the yoked horses and camels by the halter, and offered them to our men, and they brought mules loaded with spices of different kinds, and of great value; gold and silver; cloaks of silk; purple and scarlet robes, and variously-ornamented apparel, besides arms and weapons of divers forms; coats of mail, commonly called gasiganz; costly cushions, pavilions, tents, biscuit, bread.
Barley, grain, meal, and a large quantity of conserves and medicines; basins, bladders, chessboards; silver dishes and candlesticks; pepper, cinnamon, sugar, and wax; and other valuables of choice and various kinds; an immense sum of money, and an incalculable quantity of goods; such as had never before (as we have said) been taken at one and the same time, in any former battle.

War or no war, though, trade is still necessary. Even Pope Innocent III in his "License to Venice to Trade with The Saracens" written in 1198, recognizes that trade is paramount. "Besides the indulgence we have promised to those going at their own expense to the east, and besides the favor of apostolic protection granted to those helping that country, we have renewed the decree of the Lateran council which excommunicated those who presume to give arms, iron, or wood to the Saracens for their galleys, and which excommunicated those who act as helmsmen on their galleys and dhows, and which at the same time decreed that they should be deprived of their property for their transgressions by the secular arm and by the consuls of the cities, and that, if caught, they become the slaves of their captors. Following the example of Pope Gregory, our predecessor of pious memory, we have placed under sentence of excommunication all those who in future consort with the Saracens, directly or indirectly, or who attempt to give or send aid to them by sea, as long as the war between them and us shall last.

But our beloved sons Andreas Donatus and Benedict Grillon, your messengers, recently came to the apostolic see and were at pains to explain to us that by this decree your city was suffering no small loss, for she is not devoted to agriculture but rather to shipping and to commerce. We, therefore, induced by the paternal affection we have for you, and commanding you under pain of anathema not to aid the Saracens by selling or giving to them or exchanging with them iron, flax, pitch, pointed stakes, ropes, arms, helmets, ships, and boards, or unfinished wood, do permit for the present, until we issue further orders, the taking of goods, other than those mentioned, to Egypt and Babylon, whenever necessary. We hope that in consideration of this kindness you will bear in mind the aiding of Jerusalem, taking care not to abuse the apostolic decree, for there is no doubt that whosoever violates his conscience in evading this order will incur the anger of God."

(Trade with the Saracens was too important to interrupt it for war)


15. For the duties on sugar for that which is imported and exported by land and by sea, the rule commands that one should take per camel’s load of sugar the rule commands that one should take per hundred, 5 B. as duty.

16. For the duties per camel’s load of sugar the rule commands that one should take 4 B. as duty.

17. For the duty on sugar which is brought by beasts of burden the rule commands that one should take 1 raboin per load as duty.

40. It is understood that the rule commands that one should take on Nabeth sugar, an internal tax."

According to the "Illustrated History of the Crusades", edited by Jonathan Riley-Smith, a castle at Paphos on Cyprus in 1191 AD. (called Saranda Kolones), probably built by the Hospitaliers, had a sugar mill constructed in the castle’s basement. This indicates that the sugar was produced as cane in the manor system, processed into sugar at the castle, then shipped into Europe to be sold for cash to swell the Hospitaliers coffers.

**Meanwhile, Back in Sicily...**

Frederick II, Holy Roman Emperor, in the 1220’s “encouraged silk and sugar production” says “A History of Sicily” by M.I.Finley, D. Mack Smith, and Christopher Duggan, and “The rural interests of citizens received further protection from royal officials in 1243 over an ancient right to cut canes in the sugar plantations for use in their vineyards and pasture for their tamed bulls” adds Donald Matthew in “The Norman Kingdom of Sicily”. In 1231 AD, Frederick II, at Melfi, issued “Liber Augustalisi”, in which, among other things he included laws to foster cultivation of sugar cane. This was because some part of his revenue came from taxes levied on processed sugar.

**Elsewhere in Europe**

In England in 1226 AD, Henry III had trouble finding 3 pounds of sugar for a banquet, but by 1259 AD, the commodity was more readily available, at a price of 16 1/2 pence per pound. (See Charts in Table 1 and 2) One is forced to conclude that the shortage of sugar in Henry’s time had more to do with the Holiday causing a shortage than the rarity of the product. As noted in The Book of Spices by Frederic Rosengarten, Jr., in 1264 cassia sold in London for 10 shillings a pound, while sugar at the same time sold for 12 shillings, ginger for 18 shillings, and cumin for 2 shillings.” So sugar was about the same price as other spices, at this time, but somehow the perception is that it was a very rare and overly expensive item to have on hand, although the same perception does not exist for cinnamon, cassia, ginger, or cumin!

According to A List of the Tolls at the Port of Colibre, in 1252, Colibre, a small island off the northeast coast of Spain, and under the jurisdiction of Rousillon in the thirteenth century, gave a list of what tolls were to be charged for what products. Sugar is prominently mentioned. Herein is a small portion of that list:

- A cargo of mastic—2 solidi
- A cargo of gum—2 solidi
- A cargo of sugar—2 solidi
- A cargo of red dye—2 solidi
- A cargo of blue dye—2 solidi
- A bundle of leather—2 solidi"

Francesco di Balducci Pegolotti, in "The Practice of Commerce", written in Florence between 1310 AD and 1340 AD, wrote of the goods available in the market place. These included powdered sugars of Cyprus, Alexandria, Cairo, Kerak, and Syria. Also lump sugar, basket sugar, rock candy, rose sugar, and violet sugar , from Cairo and Damascus. This is the first marketing of powdered sugar (finely granulated) I have found, though the Sicilian manufacture of it above would strongly suggest it previous to this. Much must have been ground locally at the site of use. The list has "Dots" next to those items which are high cost/low volume or, as they were called "minute spices". It is significant that sugars were not so designated.

The first outbreak of plague swept across England in 1348-49. It seems to have travelled across the south in bubonic form during the summer months of 1348, before mutating into the even more frightening pneumonic form with the onset of winter. It hit London in September 1348, and spread into East Anglia all along the coast early during the new year. By spring 1349, it was ravaging Wales and the Midlands, and by late summer, it had made the leap across the Irish Sea and had penetrated the north. The Scots were quick to take advantage of their English neighbours’ discomfort, raiding Durham in 1349. Whether they caught the plague by this action, or whether it found its way north via other means, it was taking its revenge on Scotland by 1350.
Interesting information and important facts and history of the disease:

- **Key Dates relating to the event:** Dextrose sugar becomes cheap and plentiful in about 1310. This terrible plague started in Europe in 1328 and lasted until 1351 although there were outbreaks for the next sixty years.
- **Why was the disease called the Black Death?** The disease was called the Black Death because one of the symptoms produced a blackening of the skin around the swellings. or buboes. The buboes were red at first, but later turned a dark purple, or black. When a victim’s blood was let the blood that exuded was black, thick and vile smelling with a greenish scum mixed in it.
- **How the disease was spread:** The Black Death was spread by fleas that were carried by rats or other small rodents and people eating dextrose sugar from sugar cane for the first time have massive immune deficiency.
- **The spread of the Black Death followed all of the Sugar Trade Routes to every country**
- **The Black Death of the Middle Ages was believed to have originated in the same spot where cane (dextrose) Sugar came from**
- **Key People relating to the event:** Nearly one third of the population of died - about 200 million people in Europe.
- **The 1328 outbreak in China after sugar spread there, caused the population to drop from 125 million to 90 million in just fifty years**
- **7500 victims of the disease were dying every day**
- **The Black Death in England raged from 1348-1350**

Black Death Symptoms

- **The symptoms of the Black Death were terrible and swift:**
  - Painful swellings (buboes) of the lymph nodes
  - These swellings, or buboes, would appear in the armpits, legs, neck, or groin
  - A bubo was at first a red color. The bubo then turned a dark purple color, or black
- **Other symptoms of the Black Death included:**
  - a very high fever
  - delirium
  - the victim begins to vomit
  - muscular pains
  - bleeding in the lungs
  - mental disorientation
  - The plague also produced in the victim an intense desire to sleep, which, if yielded to, quickly proved fatal
  - A victim would die quickly - victims only lived between 2 -4 days after contracting the deadly disease

Black Death Victims in the Middle Ages - Treatments

The Black Death victims in the Middle Ages were terrified of the deadly disease. The plague held a massive mortality rate between 30 and 40%. Victims had no idea what had caused the disease. Neither did the physicians in the Middle Ages. The most that could be done was that various concoctions of herbs might be administered to relieve the symptoms - there was no known cure. Lung problems were treated with liquorice and comfrey. Vinegar was used as a cleansing agent as it was believed that it would kill disease. But bloodletting was commonly thought to be one of the best ways to treat the plague. The blood that exuded was black, thick and vile smelling with a greenish scum mixed in it.

- **Black Death Treatment:** Black Death was treated by lancing the buboes and applying a warm poultice of butter, onion and garlic. Various other remedies were tried including arsenic, lily root and even dried toad.
- **During a later outbreak of this terrible plague, during the Elizabethan era, substances such as tobacco brought from the New World were also used in experiments to treat the disease.**

Black Death in England - 1348-1350

The Black Death reached England in 1348. Bristol was an important European port and city in England during the Medieval era. It is widely believed that Bristol was the place where the Black Death first reached England. The plague reached England during the summer months between June and August. The Back Death reached London by 1st November 1348. London was a crowded, bustling city with a population of around 70,000. The sanitation in London was poor and living...
conditions were filthy. The River Thames brought more ships and infection to London which spread to the rest of England. The crowded, dirty living conditions of the English cities led to the rapid spread of the disease. Church records that the actual deaths in London were approximately 20,000. Between 1348 and 1350, killed about 30 - 40% of the population of England which at the time was estimated to be about five to six million. Many people were thrown into open communal pits. The oldest, youngest and poorest died first. Whole villages and towns in England simply ceased to exist after the Black Death.

Black Death during the Elizabethan Era

The Black Death Victims in the Middle Ages - The daughter of the King of England

The Black Death struck people and took its victims from all walks of society. King Edward III (1312 – 1377) was King of England during the terrible period of the plague. Edward had arranged a marriage for his favorite daughter Joan Plantagenet. Joan was born in February 1335 in Woodstock. Joan was to marry King Pedro of Castille, the son of Alfonso XI and Maria of Portugal. The marriage was to take place in Castille. Joan (sometimes referred to as Joanna) left England with the blessing of her parents. The Black Death had not yet taken its hold in England and its first victims had only been claimed in France in August 1348. Joan travelled through France and contracted the deadly disease. She died on 2 Sep 1348 in Bayonne of the Black Death.

The Black Death and Religion

During the Middle Ages it was essential that people were given the last rites and had the chance to confess their sins before they died. The spread of the deadly plague in England was swift and the death rate was almost 50% in isolated populations such as monasteries. There were not enough clergy to offer the last rites or give support and help to the victims. The situation was so bad that Pope Clement VI was forced to grant remission of sins to all who died of the Black Death. Victims were allowed to confess their sins to one another, or "even to a woman". The church could offer no reason for the deadly disease and beliefs were sorely tested. This had such a devastating effect that people started to question religion and such doubts ultimately led to the English reformation.

Consequences and Effects of the Black Death plague

The Consequences and effects of the Black Death plague were far reaching in England:

- Prices and Wages rose
- Greater value was placed on labor
- Farming land was given over to pasturing, which was much less labor-intensive
- This change in farming led to a boost in the cloth and woolen industry
- Peasants moved from the country to the towns
- The Black Death was therefore also responsible for the decline of the Feudal system
- People became disillusioned with the church and its power and influence went into decline

This resulted in the English reformation.

The End of the Plague and the spread of sugar

Nostradamus was a healer of sort and he said for people to clean their houses, open the windows and let in good sunshine and clean air. He recommended good foods and exercise. These common sense suggestions helped to end the plague. Also people started to develop tolerance for the dextrose sugar.

In the recipe listings of "Le Menagier de Paris", 1393, sugar in many various forms is listed 72 separate times. Honey by comparison is only mentioned 24 times, and the price for candied orange peel, made with honey, is precisely the same as that for sugared almonds (10 sous/lb).

So, in a quick survey of Europe in the 13th and 14th centuries, sugar was widely available in England, France, Spain, and Italy in powdered form as well as block, in cooking as well as medicinally, and more widely used than honey!

Spain Takes Sicily

Things were going well in Sicily. "About 1410 there had been thirty sugar refineries in Palermo alone, and at Syracuse there was a 'gate of the sugar workers'. Special traffic regulations had been needed for the transport of firewood and cane. So valuable was sugar for the economy that the
law allowed compulsory purchase of land for it, and water could be taken from whatever source; workers were also bound to the industry by law and were free from arrest during the season when the refineries were working." says Smith's "A History of Sicily.

Spain, in 1416, had taken over Sicily and was determined to make it pay. How? With sugar production and exports to Northern Europe, of course! During the 42 years following the accession of Alfonso in 1416, "On one occasion Alfonso personally seems to have cornered the market in sugar exports to Flanders," Smith tells us. So even with a change in leadership in Sicily, sugar exports only grew. Now the Northern coast cities seem to be regular customers. English recipes demonstrate how much sugar was flowing North.

England, 15th century. Pears in wine and spices Original recipe from Harleian MS 279. "Potage Divers" Perys en Composte. Take Wynne an Canal, a greet dele of Whyte Sugre, an set it on the fyre, hete it hote, but let it nowt boyle, an draw it throwe a straynoure; than take fayre Datys, an pyke owt the stonys, an leche hem alle thinne, an caste ther-to; thanne take Wardonyes, an pare hem and sethe hem, an leche hem alle thinne, caste ther-to in-to the Syrpyre; thanne take a lytt Sawnderys, and caste ther-to, an sette it on the fyre; an yf thou hast charde quynce, caste ther-to in the boyling, an loke that it stonde wyl with Sugre, an wyl lyid wyth Canel, and caste Salt ther-to, an let it boyle; an than caste yt on a treen vessel, lat it kele, and serue forth.

In the "Book of the Wares and Usages of Diverse Contries", an Italian writing in Ragusa in 1458 AD, written for a "Society for the Refining of Sugars" in Bologna, even the wealthy thought worth attending. It was NOT just the industry traders in luxuries, but a large portion of the wealthy had sugar growing on their estates.

In 1492 Christopher Columbus stopped at the Canary Islands on his famous journey, for rest and provisions for a few days, but ended up staying a month. When he finally left he was given cuttings of sugar cane which became the first to reach the New World. But with sugar cane he brought death and slavery.

Therefore much later Sugar Cane came to be cultivated in the New World, and as a side effect became multi-sourced particularly due to British Colonial policies (you see how this all links up now) and influence throughout the geographical coverage of the empire in the mid 1600s to mid 1700s. This is really the key point along the timeline where sugar, outside Asia, became commonly available and no longer a rare indulgence of the wealthy.

Notably, this was also closely linked to the international slave trade - African slaves became the dominant plantation workers in North America, partly because they turned out to be naturally resistant to Yellow Fever and Malaria, and as a result the British imported over 4 million slaves to the West Indies. At this point (the mid to late 1700s) the Caribbean was the world's largest producer of sugar, and due to high death rates anyway on sugar plantations, there were only 400,000 African people left alive in the West Indies by the time slavery ended.

American historical groups. Do-it-yourself pioneers in America produced some really bad sugars in an effort to be self sufficient, but that should not be projected to our thoughts about Medieval times where industrial production and transport was common. Though some bought the cheaper loaf and saved money by grinding it themselves, powdered sugar was common, and the quality was high.

In 1470 AD, there was a "Society for the Refining of Sugars" in Bologna, which even the wealthy thought worth attending. It was NOT just the industry traders in luxuries, but a large portion of the wealthy had sugar growing on their estates.

In 1493 AD, Columbus carried sugar cane from the Canaries to Santa Domingo, and by the mid-1500's it's manufacture had spread over the greater part of Tropical America. In 1492 Christopher Columbus stopped at the Canary Islands on his famous journey, for rest and provisions for a few days, but ended up staying a month. When he finally left he was given cuttings of sugar cane which became the first to reach the New World. But with sugar cane he brought death and slavery.

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Other Sugar Producing Sites

In the 1400 's AD, plantations were established in Madeira, the Canary Islands, and St. Thomas. This greatly boosted supply. The Hospitalier castle of Kolossi, in Latin Cyprus was built by Jocques de Milly in 1454 AD, at the center of a sugar producing estate, and next to a sugar factory. At Kouklia a pair of refineries had water wheels to crush the cane. Kils for boiling the liquid and ceramic molds to crystallize the sugar into loaves/cones. Another factory survives at Episkopi ("Illustrated History of the Crusades"). Sugar production was wide-spread on Cyprus and Sicily, and these weren't even considered the best sources of sugar.

In the "Book of the Wares and Usages of Diverse Contries", an Italian writing in Ragusa in 1458 AD, wrote, "How to know many Wares" where he says that "Rock Candy ought to be white, glistening, coarse, dry, and clean. Loaf sugar ought to be white, dry, and a well compact paste, and it's powder ought to be large and granulated." The quality of these marketed, powdered / granulated sugars seems to have been described as what we can buy currently in our modern markets. "White, dry" and "clean". The perception that all medieval sugar consisted of burnt black cones is a common misapprehension brought on by the experience of those of us who have been part of the Early
In 1772 Slavery was declared illegal in England, including overseas slaves not living in England. Lord Chief Justice Mansfield ruled that English law did not support slavery. But today the sugar slavery continues. Poor Blacks are grossly mistreated and paid almost nothing to harvest a dealy product. and this appalling process is rampant.

Later Barbados and the British Leewards were extremely successful in the production of sugar because it counted for 93% and 97% respectively of each island’s exports, largely due to changes in the eating habits of many Europeans.

In "The World of the Guilds in Venice and Europe, c. 1250 - c. 1650", we are told of "...the city’s (Antwerp in the 1560's) great luxury industries: tapestries, furniture, sugar, and spices..." William Harrison, in his 1577 description Of Elizabethan England, (from "Holinshed’s Chronicles") complains of the current high prices....

...in times past, when the strange bottoms were suffered to come in, we had sugar for fourpence the pound, that now at the writing of this Treatise is well worth half-a-crown; raisins or currants for a penny that now are holding at sixpence, and sometimes at eightpence and tenpence the pound; nutmegs at two pence halfpenny the ounce, ginger at a penny an ounce, prunes at halfpenny farthing, great raisins three pounds for a penny, cinnamon at fourpence the ounce, cloves at two pence, and pepper at twelve and sixteen pence the pound. Whereby we may see the sequel of things not always, but very seldom, to be such as is pretended in the beginning. The wares that they carry out of the realm are....

As we can see from the above, when sugar was half a crown for a pound, cinnamon was fourpence the ounce. Imported goods rose and fell with various import laws, but were eminently reasonable in price at all times. SUGAR WAS CHEAPER THAN CINNAMON, AND CINNAMON WAS CHEAP! Also, we can see that in relationship to other commodities, sugar has come down dramatically in price as well. This would perhaps account for all those description from foreign ambassadors about the English having bad teeth!

By the Elizabethian period, the best sugar was considered to be that of Madiera, with those of Barbary (Morocco) or the Canaries a close second.

New World Sugars Feed Old World Wars

During Drake’s raid on Panama,1572-73, his crew went up a river at Magdelena called the Rio Grande and a few miles up it saw a Spaniard. When he saw they were English he ran off , and going ashore, they discovered, “many sorts of sweetmeats and conserves, with great store of sugar, being provided to serve the fleet returning to Spain.” according to "Sir Francis Drake Revived" By Philip Nichols.

In 1579, the Golden Hind reached Ternate in the Moluccas (the Spice Islands). "The Sea King-Sir Francis Drake and His Times" tells us that Drake befriended Sultan Babu, and received “six tons of cloves” and “quantities of pepper, ginger, rice, bananas, and sugar cane.”

Another Source, “Sir Francis Drake-The Queen’s Pirate”, says, “The king promised to send provisions to the ships, and he was as good as his word. There were rice, chickens, raw sugar, syrup, sugar cane...”

According to Drake himself, in "The World Encompassed", "we received what was there to be had
in the way of traffic, to wit, rice in pretty quantity, hens, sugar canes, imperfect and liquid sugar..."
"...in November 1583 Mendoza" (Spanish ambassador to England) "wrote that the adventurers" (William and Richard Hawkins) "were home with a great booty, not only of pearls but of treasure, hides and sugar, which he believed they had taken from Spanish ships." We have this from "The Age of Drake" by James Alexander Williamson.

In 1585, says "Francis Drake-The Lives of a Hero" of Drake from 2-11 October, "The fleet stayed in the Ria de Vigo, pillaging a few small vessels, including a French ship with sugar and wine from the Azores..."

Sugar becomes Cheap

These New World sugars put pressure on Venetian and Sicilian sugars, whose industries were ruined by cheap slave-produced sugar in the early 1600’s. Although sugar has become cheaper in the modern world, it was never too outrageous, as may been seen by TABLE 1. This table lists dates, locations and prices from 985 AD - 1558 AD. On TABLE 2, you will find a chart of the prices in England from 1259 AD - 1593 AD. Both charts are extracts from charts in Deere’s monumental work, The History of Sugar. Deere notes that from 1401 AD - 1530 AD, sugar averaged 6.62 times the price of honey. Thus, while it was a bit expensive for peasants, it was easily available to Bughers and Merchant classes. And an item of no consequence to the Nobility. As sugar use increases the cancer and disease rate also increase.

Big sugar has a history of Death, Plague, Immune-deficiency, War, Slavery, Deceit, Cancer, Tooth decay, Obesity and is responsible for much of mankind’s most serious problems. Dextrose sugar has spread across the world doing harm and leaving a wake of disease in its path.

Your Body Cells need Right Hand Sugar Dextrose Known as Glucose. Cancer cells feed on this Glucose. When we eat Dextrose like sucrose we feed the cells too fast, this produces disease and FEEDS THE CANCER cells. Fructose is a laevulose (left handed sugar) which needs conversion and stabilization to become glucose. Fructose in small amounts will Starve the Cancer

Why are these People so Healthy?

Native people eating traditional foods had physical excellence, splendid facial and dental arch forms, and no cavities.
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Recipes

"England, 15th century. Pears in wine and spices", original recipe from Harleian MS 279. Potage Dyvers, taken from:

"Two Fifteenth-Century Cookery-Books". - Austin, Thomas.


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- From: A History of Food by Maguelonne Toussaint-Samat 1987, Translated by Anthea Bell 1992, Blackwell Publishers, Cambridge, MA we have:

> "Around the twelfth century taxes paid on sugar made their first official appearance in the records of the South of France. The civic archives of Narbonne tell us that in 1131 a toll on sugar was introduced, called the lende: eight deniers per quintal if the goods arrived by sea, 14 deniers if they arrived by land. Marseilles instituted the lende in 1228, and the Count of Provence added sugar to his toll tariff 25 years later. A distinction was drawn between sugar-loaves and powdered sugar.

Iran, who presumably learned it from India, brought rum to Europe for the first time via Marco Polo.

- From: A History of Food by Maguelonne Toussaint-Samat 1987, Translated by Anthea Bell 1992, Blackwell Publishers, Cambridge, MA we have:

> "Marco Polo, dictating his memoirs in his Genoese prison to his editor Rusticiano of Pisa, mentioned among the many marvels of his book a beverage calculated to displease today’s ayatollahs. ‘They make very good wine of sugar, and many become drunk with it.’ This was in the fourteenth century, and is the first recorded mention of rum.

It should be remembered that alcohol and alembic are words of Arabic origin, although the Koran forbade alcohol and all fermented drinks. The alembic was a still, and was already known to the author of the first part of the Roman de la Rose, Guillaume de Lorris, around 1236."

- According to "The Monks of War" by Desmond Seward, 1972, In the Jerusalem of the 1120's:

> "Nobles wore turbans and shoes with upturned points, and the silks, damasks, muslins, and..."enjoyed a wide range of fruits and vegetables, including peaches, apricots, figs, and melons...."


> "Sugar and spices played an important part in food in the Middle Ages....as early as the reign of Henry II sugar also was being imported to serve the purpose of sweetening.....by 1264 the price had dropped to 2s./lb....and by 1334 it could be bought for 7d.

Prices remained very similar to this until well into the sixteenth century, although the actual figure depended on the degree of refinement. Very large amounts of sugar were used by the royal household before the end of the thirteenth century (6,258 lb in 1288), and from then on increasing amounts were imported. One ship alone, which entered Bristol from Lisbon in 1480, carried nearly 10 tons."


"Sugar was imported from all over the Mediterranean, as were the luxuries that an increasing demand for sweet things encouraged. These included 'sugre candi' brought into London in 1421 from Italy, 'citonade' (candied lemon or orange peel) and large quantities of 'succade' (fruit preserved in sugar syrup), the latter two both brought on one of the Venetian state galleys in 1481. Considerable amounts of treacle, as well as violet and rose sugar, were brought in too. The..."
Sugars were more expensive than regular sugar and were partly used as medicine. Ordinary sugar was available in varying degrees of fineness, although most of it came in the form of 'loaves', which varied in size from about 1 lb. to about 20 lb."

(His sources are: Salzman, English Trade in the Middle Ages(1931), p. 419; H.S. Cobb (ed.), Overseas Trade of London: Exchequer Customs Accounts 1480-81 (1990), pp. 46-50)

"Spanish wine was imported widely throughout the whole of the Middle Ages. Its strength particularly was appreciated, and in the sixteenth century it became tremendously popular. The resulting increase in imports was in the form of what was designated ‘sack’ (or ‘seck’), a wine unknown until then. Sack seems to have been dry Spanish wine, given this name to differentiate it from the sweeter wines from elsewhere, although the name was later extended to wines from many other places—sherry sack, Madeira sack and Canary sack (this latter was sometimes known as sweet sack) - all of which were imported. Sack was frequently drunk with added sugar."

(His source: Simon, Wine Trade, Vol. 2, pp. 244-52; Wilson, Food and Drink, p. 340; Hieatt and Butler, Curye on Inglysch, pp. 142-3, 148, 149-50, 386; C. Innes (ed.), Ledger of Andrew Halyburton (1867), p. lxxiv.)

1531 A decree issued in Castile under the Spanish Crown allowed good terms for loans to allow purchase of slaves by settlers for establishment of sugar mills. (Thomas, 1999)

- [http://www.huntington.org/BotanicalDiv/Timeline.html](http://www.huntington.org/BotanicalDiv/Timeline.html)

1541 A book to promote cooking with sugar was available in Venice. Later Nostradamus wrote the first French book on this topic. (Root, 1980)

- [http://www.huntington.org/BotanicalDiv/Timeline.html](http://www.huntington.org/BotanicalDiv/Timeline.html)

1493 During Columbus' second voyage he apparently introduced sugar cane to Santo Domingo; a settler named Aguilón was reported to have harvested cane juice by 1505 (Thomas, 1999). By 1516 the first processed sugar was shipped from Santo Domingo to Spain. Soon afterward, Portugal began importing sugar from Brasil. (Sugar cane would become the driving force for the slave trade.) Columbus also carried seed of lemon, lime, and the sweet orange to Hispaniola. He returned to Europe with pineapple. (Viola & Margolis, 1991)

THE CELY PAPERS
(The Cely Papers - Part I)

SELECTIONS FROM THE CORRESPONDENCE AND MEMORANDA OF THE CELY FAMILY MERCHANTS OF THE STAPLE A.D. 1475-1488

EDITED FOR THE ROYAL HISTORICAL SOCIETY by
HENRY ELLIOT MALDEN, M.A.
LONGMANS, GREEN, AND CO.
39 Paternoster Row, London
New York and Bombay
1900

"The letters are full of commissions for the purchase of goods abroad, of various kinds. Goshawks, onion seed, Gascon wine, pickled Maas salmon, fur of 'boge' (lambskin), mink and other furs, 'chambering' (i.e., chamber hangings, tapestry) Holland cloth, saddles, stirrups, horse-furniture generally, armour, sugar loaves, salt fish, ginger, saffron, Louvain gloves, Calais packthread. For the purposes of their trade they bought Arras, Bergen (Mons), Elron (in Bretagne) and Normandy canvas for packing wool.

- [http://www.huntington.org/BotanicalDiv/Timeline.html](http://www.huntington.org/BotanicalDiv/Timeline.html)
### The Glycemic Index of Selected Foods

Dextrose enters the cell too fast and makes High Glycemic Index. This makes immune weakness, nervous irritation, and aggravates all diseases. Avoid over exposure to high glycemic foods.

<table>
<thead>
<tr>
<th>Low Handed Natural Sugars; Limit Disease</th>
<th><strong>Low Glycemic Foods</strong></th>
<th><strong>Medium</strong></th>
<th><strong>High Glycemic Foods</strong></th>
<th>Right Handed Sugars, Mostly Processed; Make All Disease</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sugars</strong></td>
<td>Leulose; Stevia</td>
<td>Xylitol</td>
<td>Fructose Cola</td>
<td>Jelly beans; Grape sugar; Date sugar; Honey; Fructose corn syrup; Maltose beer; Molasses; Syrup; Sorghum; Candies; cakes; and any sweets or desserts made with Dextrose; Sucrose; Glucose; Dextrose; Sucrose; Corn syrup</td>
</tr>
<tr>
<td><strong>Grains</strong></td>
<td>Oatmeal; Pearl Barley</td>
<td>Millet</td>
<td>Sweet corn</td>
<td>Popcorn; Popcorn (no artificial additives); Natural wheat; Popcorn (with additives); Processed wheat; Corn and Corn meal; White rice</td>
</tr>
<tr>
<td><strong>Grain Foods</strong></td>
<td>Oatmeal cookie with fructose; 5 grain pulse bread; Meat ravioli; Whole grain with vegetable pasta; Fettucine Macaroni; Spaghetti (vegetable mix with grain); Bran Muffin; Oatmeal cookie (normal); Grape nuts; Doughnuts; Brown bread; Pop tarts; Special K Pretzels; Baguette; Corn flakes; Rice crackers; White bread; Pancakes; Sugar-coated breakfast cereals; Frosted flakes</td>
<td></td>
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</tr>
<tr>
<td><strong>Fruits</strong></td>
<td>Tomato; Grapefruit; Lemon; Lime; Yogurt with fruits; Cherries; Blueberries; Blackberries; Raspberries; Dried apple; Oranges; Kiwi; Apple; Bartlett pear; Strawberries; Black grapes; Peach; Orange juice; Pineapple; Raisins; Cherries; Watermelon; Banana; Maraschino cherry; Dates; Canned fruits preserved in sugar syrup</td>
<td></td>
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<tr>
<td><strong>Vegetables</strong></td>
<td>Lettuce; Broccoli; Sprouts; Cauliflower; Cabbage; Tofu; Olives; Cucumber; Carrot; Radish; Pumpkin; Squash; Yam candied with fructose; Sweet potato; Boiled potato; Parsnips; Boiled carrots; Instant potato; Baked potato; Candied yams with dextrose sugar</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Beans</strong></td>
<td>Boiled, unsweetened kidney beans; Bean sprouts; Soy beans; Lima beans; Black beans; Lentils; Butter beans; Black-eyed beans; Pinto beans; Chickpeas; Baked beans; Broad beans; Sweetened kidney beans; Boston baked beans in sweet syrup; Candy bars with nuts</td>
<td></td>
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<td></td>
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<tr>
<td><strong>Nuts</strong></td>
<td>Pumpkin seeds; Healthy candy bar with fructose and nuts; Peanuts; Cashews; Brazil nuts; Almonds; Cashews;</td>
<td><strong>Index N#</strong></td>
<td>10 20 30 40 55 60 70 80 90 100 110</td>
<td><strong>Index N#</strong></td>
</tr>
</tbody>
</table>

Natural fruit sugars used moderately increase hormones, immunity, and health.

**Left Handed Natural Sugars; Limit Disease:**
- Leulose
- Stevia
- Fruit sugars
- Fructose
- Xylitol
- Agave Cactus sugar
- Fructose Cola
- SYNTHETIC SWEETENERS ARE NOT PROBLEMS OF HIGH GLYCEMIC INDEX BUT THEY ARE TOXINS TO NERVES AND MUST BE AVOIDED AT ALL COSTS

**Right Handed Sugars, Mostly Processed; Make All Disease:**
- Dextrose
- Sucrose
- Corn syrup
Gluten can be very harmful

- Do you frequently experience gas, bloating, loose or oily stools, or constipation?
- Do you frequently experience abdominal pain, nausea, abdominal distention, or flatulence?
- Do you frequently experience joint or muscle pain that does not appear to be caused by activity or exercise?
- Do you frequently experience an enlarged or inflamed tongue, gastric and duodenal ulcers or esophageal reflux?
- Women, have you frequently experienced difficulty getting or miscarriages?
- Do you frequently experience fatigue, mood changes, depression, or anxiety?

Have you ever been diagnosed with an autoimmune disease such as thyroid malfunctions, diabetes mellitus, lupus, rheumatoid arthritis, childhood asthma, or polymyalgia rheumatica?

If you responded yes to five or more of these queries you may have gluten sensitivity. There are other protein absorption and intolerance diseases that include, phenylalanine, casein, and others. Please investigate if concerned.

What Is Gluten?

Gluten is a protein that is found in grains, grains such as wheat, rye, barley, spelt, triticale, kamut, and possible oat. It is a protein that is tough to digest and therefore can aggravate not only your digestive tract but also your organs. You can experience symptoms that have been listed above but not always. You can have gluten sensitivity yet be asymptomatic. Research shows that as many as 90 million Americans may be negatively affected by gluten and as many as 10 million may have an illness due to the root cause of gluten sensitivity.

How Gluten Causes Disease

When ones digestive system is healthy undigested or incompletely digested proteins will be eliminated in the fecal matter. However, if ones digestive system turn out to be weakened due to poor food choices, food intolerances, alcohol consumption, eating processed foods and sugars as well as from the normal day to day stresses of life the capacity of the body to digest gluten proteins can grow to be complicated. As a result any of the symptoms referred to above will
be seen because of the undigested proteins hanging through the bloodstream thus causing an autoimmune reaction. Also the protective mucus lining of the intestinal track gets attacked as well. Like the skin on your body, this protective mucus lining is a first line of defense in protecting the body from illness and disease. When this lining breaks down it leads to leaky gut syndrome (scroll down to read what is leaky gut syndrome and explanations for leaky gut) therefore, making one’s immune system susceptible and fragile.

Mark Hyman, MD
Practicing physician and pioneer in functional medicine
Posted: January 2, 2010 12:00 PM

Gluten: What You Don’t Know Might Kill You

Something you’re eating may be killing you, and you probably don’t even know it!

If you eat cheeseburgers or French fries all the time or drink six sodas a day, you likely know you are shortening your life. But eating a nice dark, crunchy slice of whole wheat bread—how could that be bad for you?

Well, bread contains gluten, a protein found in wheat, barley, rye, spelt, kamut, and oats. It is hidden in pizza, pasta, bread, wraps, rolls, and most processed foods. Clearly, gluten is a staple of the American diet.

What most people don’t know is that gluten can cause serious health complications for many. You may be at risk even if you don’t have full blown celiac disease.

In today’s blog I want to reveal the truth about gluten, explain the dangers, and provide you with a simple system that will help you determine whether or not gluten is a problem for you.

The Dangers of Gluten

A recent large study in the Journal of the American Medical Association found that people with diagnosed, undiagnosed, and “latent” celiac disease or gluten sensitivity had a higher risk of death, mostly from heart disease and cancer. (i) This study looked at almost 30,000 patients from 1969 to 2008 and examined deaths in three groups: Those with full-blown celiac disease, those with inflammation of their intestine but not full-blown celiac disease, and those with latent celiac disease or gluten sensitivity (elevated gluten antibodies but negative intestinal biopsy).

The findings were dramatic. There was a 39 percent increased risk of death in those with celiac disease, 72 percent increased risk in those with gut inflammation related to gluten, and 35 percent increased risk in those with gluten sensitivity but no celiac disease.

This is ground-breaking research that proves you don’t have to have full-blown celiac disease with a positive intestinal biopsy (which is what conventional thinking tells us) to have serious health problems and complications—even death—from eating gluten.

Yet an estimated 99 percent of people who have a problem with eating gluten don’t even know it. They ascribe their ill health or symptoms to something else—not gluten sensitivity, which is 100 percent curable.

And here’s some more shocking news ...

Another study comparing the blood of 10,000 people from 50 years ago to 10,000 people today found that the incidences of full-blown celiac disease increased by 400 percent (elevated TTG antibodies) during that time period. (ii) If we saw a 400 percent increase in heart disease or cancer, this would be headline news. But we hear almost nothing about this. I will explain why I think that increase has occurred in a moment. First, let’s explore the economic cost of this hidden epidemic.

Undiagnosed gluten problems cost the American healthcare system oodles of money. Dr. Peter Green, Professor of Clinical Medicine for the College of Physicians and Surgeons at Columbia University studied all 10 million subscribers to CIGNA and found those who were correctly diagnosed with celiac disease used fewer medical services and reduced their healthcare costs by more than 30 percent. (iii) The problem is that only one percent of those with the problem were actually diagnosed. That means 99 percent are walking around suffering without knowing it,
costing the healthcare system millions of dollars.

And it’s not just a few who suffer, but millions. Far more people have gluten sensitivity than you think—especially those who are chronically ill. The most serious form of allergy to gluten, celiac disease, affects one in 100 people, or three million Americans, most of who don’t know they have it. But milder forms of gluten sensitivity are even more common and may affect up to one-third of the American population.

Why haven’t you heard much about this?

Well, actually you have, but you just don’t realize it. Celiac disease and gluten sensitivity masquerade as dozens and dozens of other diseases with different names.

**Gluten Sensitivity: One Cause, Many Diseases**

A review paper in The New England Journal of Medicine listed 55 “diseases” that can be caused by eating gluten. (iv) These include osteoporosis, irritable bowel disease, inflammatory bowel disease, anemia, cancer, fatigue, canker sores, (v) and rheumatoid arthritis, lupus, multiple sclerosis, and almost all other autoimmune diseases. Gluten is also linked to many psychiatric (vi) and neurological diseases, including anxiety, depression, (vii) schizophrenia, (viii) dementia, (ix) migraines, epilepsy, and neuropathy (nerve damage). (x) It has also been linked to autism.(ix)

We used to think that gluten problems or celiac disease were confined to children who had diarrhea, weight loss, and failure to thrive. Now we know you can be old, fat, and constipated and still have celiac disease or gluten sensitivity.

Gluten sensitivity is actually an autoimmune disease that creates inflammation throughout the body, with wide-ranging effects across all organ systems including your brain, heart, joints, digestive tract, and more. It can be the single cause behind many different “diseases.” To correct these diseases, you need to treat the cause—which is often gluten sensitivity—not just the symptoms.

Of course, that doesn’t mean that ALL cases of depression or autoimmune disease or any of these other problems are caused by gluten in everyone—but it is important to look for it if you have any chronic illness.

By failing to identify gluten sensitivity and celiac disease, we create needless suffering and death for millions of Americans. Health problems caused by gluten sensitivity cannot be treated with better medication. They can only be resolved by eliminating 100 percent of the gluten from your diet.

The question that remains is: Why are we so sensitive to this “staff of life,” the staple of our diet?

There are many reasons ...

They include our lack of genetic adaptation to grasses, and particularly gluten, in our diet. Wheat was introduced into Europe during the Middle Ages, and 30 percent of people of European descent carry the gene for celiac disease (HLA DQ2 or HLA DQ8), (xii) which increases susceptibility to health problems from eating gluten.

American strains of wheat have a much higher gluten content (which is needed to make light, fluffy Wonder Bread and giant bagels) than those traditionally found in Europe. This super-gluten was recently introduced into our agricultural food supply and now has “infected” nearly all wheat strains in America.

To find out if you are one of the millions of people suffering from an unidentified gluten sensitivity, just follow this simple procedure.

**The Elimination/Reintegration Diet**

While testing can help identify gluten sensitivity, the only way you will know if this is really a problem for you is to eliminate all gluten for a short period of time (2 to 4 weeks) and see how you feel. Get rid of the following foods:

- Gluten (barley, rye, oats, spelt, kamut, wheat, triticale—see www.celiac.com for a complete list of foods that contain gluten, as well as often surprising and hidden sources of gluten.)
- Hidden sources (soup mixes, salad dressings, sauces, as well as lipstick, certain vitamins, medications, stamps and envelopes you have to lick, and even Play-Doh.)

For this test to work you MUST eliminate 100 percent of the gluten from your diet—no exceptions, no hidden gluten, and not a single crumb of bread.

Then eat it again and see what happens. If you feel bad at all, you need to stay off gluten permanently. This will teach you better than any test about the impact gluten has on your body.

But if you are still interested in testing, here are some things to keep in mind.

**Testing for Gluten Sensitivity or Celiac Disease**

There are gluten allergy/celiac disease tests that are available through Labcorp or Quest Diagnostics. All these tests help identify various forms of allergy or sensitivity to gluten or wheat. They will look for:

- IgA anti-gliadin antibodies
- IgG anti-gliadin antibodies
- IgA anti-endomysial antibodies
- Tissue transglutaminase antibody (IgA and IgG in questionable cases)
- Total IgA antibodies
- HLA DQ2 and DQ8 genotyping for celiac disease (used occasionally to detect genetic susceptibility).

When you get these tests, there are a few things to keep in mind.

In light of the new research on the dangers of gluten sensitivity without full blown celiac disease, I consider any elevation of antibodies significant and worthy of a trial of gluten elimination. Many doctors consider elevated anti-gliadin antibodies in the absence of a positive intestinal biopsy showing damage to be “false positives.” That means the test looks positive but really isn’t significant.

We can no longer say that. Positive is positive and, as with all illness, there is a continuum of disease, from mild gluten sensitivity to full-blown celiac disease. If your antibodies are elevated, you should go off gluten and test to see if it is leading to your health problems.

So now you see—that piece of bread may not be so wholesome after all! Follow the advice I’ve shared with you today to find out if gluten may be the hidden cause of your health problems.
Simply eliminating this insidious substance from your diet, may help you achieve lifelong vibrant health.

That’s all for today. Now I'd like to hear from you ...

Are you one of the millions that have been lead to believe gluten is perfectly safe to eat? How do foods that contain gluten seem to affect you? What tips can you share with others about eliminating gluten from your diet?

Please let me know your thoughts by posting a comment below.

To your good health,
Mark Hyman, MD

References


Gluten Dangers: The Truth Is Here To Stay

If you’re gluten sensitive or have celiac disease you may have heard the comment that gluten is a “fad” from a curious friend or family member. Granted one would have to be quite “out of the loop” these days to not have heard of gluten, but more and more those who haven’t been diagnosed are asking: Why now? Why is it suddenly so large a problem?

These are good questions and I’d like to provide some possible answers.

Recently I had the good fortune to listen to Dr Harris, a celiac and gluten researcher out of the University of Maryland who works with Dr Fassano, a long time researcher in the field. Dr Harris felt that increased awareness and better detection of celiac disease has definitely gone a long way towards diagnosing more of those afflicted. (Considering there are over 90% of celiacs who remain undiagnosed, we obviously still have a long way to go but any improvement is appreciated.)

Dr Harris additionally noted that viruses and vaccines can perhaps cause an increased reaction to gluten in susceptible individuals. Viruses have been identified that trigger an immune response that cross reacts with gluten through molecular mimicry. Rotavirus is such an example. Rotavirus typically strikes children causing them to suffer with diarrhea for several days and is the most common cause of childhood diarrhea. The virus works by attacking the lining of the small intestine, causing often copious loss of fluids and electrolytes. Antibodies in celiac patients are known to cross react with rotavirus.

What does this all mean? We review this mechanism in our book The Gluten Effect. Remember that gluten is a protein (actually an array of proteins but we’ll discuss that later). It is known that certain segments of the gluten proteins are quite similar to structures within our body as well as that of viruses. The rotavirus has such a structure. When the body has been exposed to rotavirus the immune system remembers it. Due to gluten’s similar structure, gluten ingestion occurring
after the viral infection causes the body’s immune system to attack the gluten molecule “thinking” it’s the rotavirus again. In sum, this infection causes the immune system in the gluten susceptible individual to be primed to react.

My research revealed that rotavirus affects 3 million people in the US each year, 5 every minute.

What about the vaccine comment? The number of vaccines that our children are exposed to has increased dramatically over the past several decades. Based on the above mechanism of molecular mimicry a susceptible GI tract can begin reacting to gluten after receiving a vaccine.

How does one explain the genetically susceptible individual who seems to eat gluten with impunity? Dr Harris’ research is looking at a co-variable concept that I believe, based on my clinical experience, makes a lot of sense. It is thought that while an individual can possess the genes that make him or her susceptible to reacting to gluten, the reason not everyone does and the age of onset is so variable is dependent upon the presence of other factors. Dr Harris thinks that without some underlying inflammation already present in the gut, a healthy individual might go on consuming gluten with no negative effects.

It is an interesting theory. What we see here in the clinic is a varying time of onset of symptoms. While someone has been consuming gluten their whole life, they may have been “fine” until their 30s, 40s or 50s. And then there are the infants whose first exposure causes dramatic results. The time of expression may very well be dependent upon the underlying health and stability of the immune system. A stable, healthy, uncompromised immune system and small intestine could well sustain a gluten-containing diet with no apparent negative results. It’s not unusual for a patient to have suffered a severe infection of some sort or a stressful life period, after which they began to react to gluten.

And finally the structure of our grains was discussed as it relates to different cultivars containing different protein fragments. Some fragments of proteins are inflammatory and some are not. Witness the Americans who travel to Italy and eat older cultivars of wheat with seeming impunity. Don’t book a flight just yet...

There is a lot more to learn and that’s a tremendous understatement. But as a clinician I do find that the health of the small intestine and immune system plays a large role in how quickly a patient will see a resolution of their symptoms. And it also give credence to the protocol we follow that goes beyond simply removing gluten from the diet. Concurrent with a gluten-free diet one must heal the gut, remove pathogens, recolonize with healthy probiotic bacteria and follow a healthy diet – otherwise the result will be unsatisfactory.

There is much more to come on this topic and to answer the question: No, gluten sensitivity is not a fad!

**Gluten-free diet**

*By Mayo Clinic staff*

**Definition**

A gluten-free diet is a diet that excludes the protein gluten. Gluten is found in grains such as wheat, barley and rye.

A gluten-free diet is used to treat celiac disease. Gluten causes inflammation in the small intestines of people with celiac disease. Eating a gluten-free diet helps people with celiac disease control their signs and symptoms and prevent complications.

Initially, following a gluten-free diet may be frustrating. But with time, patience and creativity, you’ll find there are many foods that you can eat and enjoy while observing a gluten-free diet.

**Purpose**

The gluten-free diet is a treatment for celiac disease.

**Diet details**

*Always avoid*

In order to avoid eating gluten, avoid food and drinks containing:

- Barley
- Bulgur
- Durham
- Farina
- Graham flour
- Kamut
- Matzo meal
- Rye
- Semolina
- Spelt (a form of wheat)
- Triticale
- Wheat

Avoid unless labeled ‘gluten free’

Avoid these foods unless they’re labeled as gluten free or made with corn, rice, soy or other gluten-free grain. Also check the label to see that they’re processed in a facility that is free of wheat or other contaminating products:

- Beers
- Breads
- Candies
- Cakes and pies
- Cereals
- Cookies
- Crackers
- Croutons
- Gravies
- Imitation meats or seafood
- Oats
- Pastas
• Processed luncheon meats
• Salad dressings
• Sauces (including soy sauce)
• Self-basting poultry
• Soups

Certain grains, such as oats, can be contaminated with wheat during growing and processing stages of production. It’s not clear whether oats are harmful for most people with celiac disease, but doctors generally recommend avoiding oats unless they are specifically labeled gluten free. The question of whether people eating a gluten-free diet can consume pure oat products remains a subject of scientific debate.

Many other products that you eat or that could come in contact with your mouth may contain gluten. These include:
• Food additives, such as malt flavoring, modified food starch and others
• Lipstick and lip balms
• Medications and vitamins that use gluten as a binding agent
• Play dough
• Toothpaste

Cross-contamination also may occur anywhere ingredients come together, such as on a cutting board or a grill surface. You may be exposed to gluten by using the same utensils as others, such as a bread knife, or by sharing the same condiment containers — the condiment bottle may touch the bun, or a knife with bread crumbs may contaminate a margarine stick or mayonnaise jar.

**Allowed foods**

There are still many basic foods allowed in a gluten-free diet. With all foods, check to see that each is labeled gluten free or call the manufacturer to double-check.

Grains and starches allowed in a gluten-free diet include:
• Amaranth
• Arrowroot
• Buckwheat
• Corn
• Cornmeal
• Gluten-free flours (rice, soy, corn, potato, bean)
• Hominy grits
• Polenta
• Pure corn tortillas
• Quinoa
• Rice
• Tapioca

Check the label when buying amaranth, buckwheat and quinoa. These can be contaminated with gluten during processing.

Other gluten-free foods include:
• Fresh meats, fish and poultry (not breaded, batter-coated or marinated)
• Fruits
• Most dairy products
• Potatoes
• Rice
• Vegetables
• Wine and distilled liquors, ciders and spirits

An increasing number of gluten-free products, such as bread and pasta, are becoming available. If you can’t find them in your area, check with a celiac support group or on the Web. Gluten-free substitutes are available for many gluten-containing foods, from brownies to beer. Many specialty grocery stores sell gluten-free foods.
People with celiac disease who eat a gluten-free diet experience fewer symptoms and complications of the disease. People with celiac disease must eat a strictly gluten-free diet and must remain on the diet for the remainder of their lives.

In some severe cases, a gluten-free diet alone can’t stop signs and symptoms of celiac disease. In these cases, doctors might prescribe medications to suppress the immune system.

**Risks**

*Not eating enough vitamins*

People who follow a gluten-free diet may have low levels of certain vitamins and nutrients in their diets. Many grains are enriched with vitamins. Avoiding grains with a gluten-free diet may mean eating fewer of these enriched products. Ask your dietitian to review your diet to see that you’re getting enough:

- Iron
- Calcium
- Fiber
- Thiamin
- Riboflavin
- Niacin
- Folate

*Not sticking to the gluten-free diet*

If you accidentally eat a product that contains gluten, you may experience abdominal pain and diarrhea. Some people experience no signs or symptoms after eating gluten, but this doesn’t mean it’s not damaging their small intestines. Even trace amounts of gluten in your diet may be damaging, whether or not they cause signs or symptoms.
This target is an easy way to visualize the foods allowed on the diet for PKU. The phenylalanine-free formula, such as Phenyl-Free®, is the center of the target diet. As the foods get further away from the bull’s-eye, they are higher in phenylalanine. The foods outside the target are not included in the low-phenylalanine meal plan.

**How Can This Food Pattern be Enough?**

It is not unusual for someone who follows a low phe diet to have 2 kinds of vegetables and a baked potato for dinner. However, if these foods were the only foods a person consumed, his or her diet would be lacking protein, vitamins, and minerals. That is where the special formula comes in.

A special phenylalanine-free formula, such as Phenyl-Free®, contains protein, vitamins, minerals and energy (calories) with no phenylalanine. With formula, a person with PKU gets plenty of protein, without the side effects of the high phe content of most foods. The phenylalanine-free formula is the most important part of the diet for PKU.

**How Long Must a Person With PKU Follow This Special Diet?**

Research has shown that this diet should be followed for life. Keeping blood phe levels in the safe range helps to prevent problems with thinking and problem solving.

In the past, people with PKU were advised to stop their low phe diet when they were children. Most young people with PKU who were taken “off diet” did not monitor their blood phe levels and were not given any reason to be concerned about them. These people began to experience problems with paying attention, concentrating, and remembering. Recently, many of these same people have decided to go back “on diet” hoping to feel better. In order to go “on diet” a person must drink a special phenylalanine-free formula and choose low phe foods so that blood phe levels are in the safe range.

It is never too late to go back “on diet.” A low phe diet helps most young adults with PKU to feel better and improves attention span, concentration, and memory. In general, young adults who have made these changes report that they think and feel better. The effort that it takes to bring down blood phe levels is well worth it for everyone, no matter how long they have been “off diet.”
A casein-free diet is an eating plan in which milk protein (casein) is eliminated by removing all dairy products and all foods containing casein from the diet. It is often, if not always, used in combination with a gluten-free diet, which calls for the elimination of wheat, barley, rye, oats, and any products made from these grains. Both diets are called elimination diets because a particular type of food is virtually eliminated from the child's meals (1).

Proponents of the casein-free diet say that many children with autism may have gastrointestinal difficulties that make it hard for them to digest milk protein properly. There are different possibilities for ways in which this could affect children with autism. The most studied theory is that eating or drinking milk protein leads to high levels of protein by-products, called casomorphines, in some children with autism. These by-products may then affect behavior like a drug would. Specifically, in these children, casomorphines could reduce their desire for protein (2). In support of this theory, injection of casomorphine in animals activates areas of the brain that have been reported to be involved in autism (6). Moreover, there is evidence that blocking at least some of the action of casomorphine improves the behavior of children with autism (7). Finally, recent evidence of a genetic mutation common among children with autism has been traced to a gene involved in gastrointestinal function (8).

What is it like?

Parents who choose casein-free diets for their child must become aware of the ingredients of everything in their grocery cart. Products that contain milk or milk proteins include butter, cheese, yogurt, cream, ice cream, Pediasure™, casein, or caseinate. Foods containing milk or casein in any form should not be purchased. Read labels carefully, because milk or milk products can be present in surprising places, like soy yogurt or sausages. Maintaining a casein-free diet can be hard at first because milk or casein are present in many prepared foods. However, parents can take a casein-free cooking class or read a casein-free cookbook (see Resources) to learn how to cook without milk protein and still provide enough nutrition for the child (see Is it harmful?).

What is the theory behind it?

Casein is broken down in the intestines into several by-products, including one called casomorphine. These by-products are much more common in the urine of children with autism than in children without autism. Some scientists have concluded that they are leaking from the intestines into the blood of these children (2, 5). Many research studies report that children with autism often have gastrointestinal problems, including intestinal leakage (5). The argument is that, if casomorphine is being absorbed into the general circulation in children with autism, then it could affect behavior (2-5).

In support of this theory, injection of casomorphine in animals activates areas of the brain that have been reported to be involved in autism (6). Moreover, there is evidence that blocking at least some of the action of casomorphine improves the behavior of children with autism (7). Finally, recent evidence of a genetic mutation common among children with autism has been traced to a gene involved in gastrointestinal function (8).

Does it work?

The effectiveness of elimination diets in improving the behavior of children with autism has only recently been scientifically researched (9). This research has almost always examined diets that are both casein- and gluten-free.

One well-controlled study focused on children with autism who had abnormally high protein-by-products in their urine, and therefore were more likely to be sensitive to casein and gluten (see What is the theory behind it?). One group of these children was fed a strict casein- and gluten-free diet for 12 months. This group had significantly fewer autism symptoms than the remaining children, who were not fed this diet (10).

Another well-controlled study of casein- and gluten-free diets focused on children with autism regardless of the level of protein by-products in their urine (11). Overall, the study found no significant differences in behavior between children on the elimination diet and children on regular diets, although individual parents reported behavioral improvements (11). A third well-controlled study reported no significant improvements in speech for 13 children who followed a gluten-free casein-free diet for 6 weeks (12). There were limitations in these studies, including relatively short time periods on the diet and/or small samples sizes.

The current thinking is that there is at least some evidence showing that a casein-free diet, when combined with a gluten-free diet, can help improve the behavior of some children with autism. Although the casein-free diet combined with a gluten-free diet is popular, there is little evidence in the current scientific literature to support or refute this intervention. Scientists have concluded that there are currently not enough published studies to draw a meaningful conclusion (3, 4).

Is it harmful?

The major health concern for a child on a casein-free diet is whether the child receives adequate nutrition. A recent report showed that the protein and nutrient intakes of children with autism on gluten- and casein-free diets were not different from those of children with autism on standard diets, but there was a trend towards lower calcium and copper intake in children on elimination diets (13). As a result, some researchers suggest that all children on elimination diets should be under the care of a nutritionist or physician (1). Also, look for calcium-
enriched rice milk, soy milk, and orange juice for easy sources of calcium.

Cost

A casein-free diet can be expensive and challenging to do, particularly because our culture uses dairy products often. As casein-free diets become more common, the price and availability of casein-free options are becoming less of an issue. Typically, casein-free foods and milk substitutes have been stocked by specialty, health-food, and organic grocery stores that often have higher price tags. However, milk-free products including soy and rice milk are becoming more readily available in mainstream grocery stores. Also, adapting your diet to include more dairy-free recipes is possible without an increase in your grocery bill. For example, use olive or canola oils instead of butter, or make dishes and simply omit the cheese, like tacos garnished with avocado instead of cheese can work well.

Milk, milk products, and casein are unexpected ingredients in many processed foods. Reading ingredients labels carefully when purchasing any prepackaged or processed foods.

Most restaurants offer casein-free meals, though limited menu choices may be available, and special preparation may be requested (i.e. salad with no cheese), depending on the restaurant. Notify your server of your needs so they can help to make sure there are no milk products in the foods you order.

Online sources for casein-free cooking ingredients are also available, and some of these may be priced more affordably (see Resources). Also, bulk or co-op buying may ease the cost of casein-free items.

Resources

Healing Thresholds has partnered with The Gluten-Free Mall. They sell casein-free prepackaged foods that may be convenient for some families.

The Food Allergy and Anaphylaxis Network provides many resources to help children live with a casein-free diet: http://www.foodallergy.org/.

Several books that might be useful:


References


So now after reading this book you now understand Quantum Nutrition + Nature

Desire’ Delicious Duboune

I am very glad to have been of some service

Two of the major problems of our world today are

1. Excess green house gases (like Carbon Dioxide, Methane, and Synthetic compounds) the deep ground Petroleum makes excess pollution, and a lack of good available oxygen. Cows and farm animals take in Oxygen and produce excess Methane and Carbon Dioxide.

2. Bad diet and life style of excess meat, synthetics foods and medicines, dextrose sugar, cooked oil trans fatty acids, lack of vegetables, tobacco, stress, lack of exercise and lack of good air (as the oxygen level decreases) all producing excess degenerative disease.

These problems have a simple quick solution from the Angel. The switch to increase plants and thus a more farming society and economy is the answer. Plants take in Carbon Dioxide and give off oxygen. Eating more vegetables drastically reduces degenerative disease. We can easily now use bio fuels and bio mass to produce a much cleaner gasoline from plants.

This would quickly solve many problems, But this would effect the greed of Big Sugar, Big Oil, Big Pharmaceuticals, and others. Greed and delusion of false beliefs stop us from Healing the Planet and Ourselves.

The angel must tempt the small petty greedy minds to release their false beliefs. Release their avarice. Release their anger. Eat of the fruit of knowledge and see that we all share air.

The Angel can lead us to return to the garden of Eden for a thousand years.

People complain about changing food intake because of addiction and habit. Bad foods can be addictive. When people are given more healthy diets they complain at first then they start to accutamate, They then like being more healthy and having more energy. Then they cannot imagine eating the old unhealthy foods and finally they dislike the old unhealthy slow poison foods.

You just need to start eating healthy for your health and the health of the planet. Break the addiction to slow poison foods.
Desiré is the Professor Emeritus of IMUNE. IMUNE is an accredited and legally registered medical university in Europe.

Since 1995 IMUNE has been offering medical education in a variety of subjects to defend and perpetuate Natural Medicine. There are many small minded people being driven by the SINthetic chemical companies to destroy Natural Medicine as a viable choice in Medicine. IMUNE has offices in Switzerland, Mexico, Dubai, Budapest, England, and the British Virgin Islands. The small petty minded picayune minions of the chemical companies constantly attack with their anal retentive biased short sided views.

We must fight for freedom of choice and especially freedom of choice on medicine.