About Carbohydrates

PLEASE NOTE: In the discussion of nutrition, I use the term "complex" carbohydrate and "simple" carbohydrate. I realize the encyclopedia relies upon the molecular structure of a food when it defines it in these terms, but I have not followed this guideline in the discussion I am presenting. The reason I cannot follow this guideline is because science has allowed the misunderstanding of molecular composition to distort some very fundamental principles in diet and nutrition. Medicine defines a molecule from a biochemical standpoint only. This does not allow for consideration of catabolic or anabolic reactions. In organic chemistry, the blood is not as important as the metabolic reactions occurring in the cells. For example: many people are iron deficient. The common medication for this is made of iron molecules harvested from inorganic metal compounds. Electrical charges are placed on sheets of metal much like your cast iron pans. The electrical charges break down the iron molecules so they can be placed in pill form. On the molecular level, it is all iron, but the misunderstanding is that all iron molecules are alike in the task they perform. When you get your blood test, it shows the iron is normal now that you are taking this iron pill, but your cells cannot use this inorganic iron. You can see that molecular structure is not an accurate method of describing complex vs. simple carbohydrates in the area of diet and nutrition. As a point of fact, iron pills are constipating, but if you take an organic form of iron, meaning it came from a plant, it will loosen the bowels. They have the same molecular structure, but the origin of the molecule is very different. The origin is what makes all the difference in organic chemistry.

We will be discussing organic vs. inorganic at some point,, so this concept will be understood in more detail. I will summarize now by saying that molecules originating from inorganic compounds will not properly bind to organic molecules. A cast iron pan does not break down in the presence of heat, but organic iron molecules will. This is why you feel weak when you have a fever: your iron molecules break down into their basic components, leaving you with low energy. During a fever, your liver breaks your iron molecules apart for other cellular functions. The same goes with the constipation issue and iron pills. The liver uses iron to make bile, and bile makes the stool loose. Inorganic iron cannot be used by the liver because it cannot break it into its smallest form. It actually has a toxic metal effect in your liver. It makes your blood appear balanced, and that is all doctors are trained to do, so they don't think twice about it. This same principle applies to all foods and all molecules. What happens to brain cells if they are exposed to more than 106 degrees of heat? They die, and you risk brain damage. Why then can a food be processed at hundreds of degrees, undergo chemical stripping, and still be classified as adequate for the body? Just because a molecule looks the same does not mean it will perform the same function. Every element found in the human body can be found in the earth, but a human being cannot be created from the earth (except for the initial one designed by God). Please understand that I am not contradicting molecular science, but simple and complex foods as will be discussed should be viewed from the standpoint of organic chemistry. Although it may complicate and even

contradict previous knowledge that you have gained, keep in mind that a complex carbohydrate must be a whole food. It cannot have been processed or refined or heated over 100 degrees. Most of all, it must contain all of its natural vitamins and minerals.

Plants use water from the soil, carbon dioxide from the air and chlorophyll to make carbohydrates. The chemical compounds that make a carbohydrate are carbon, hydrogen and oxygen. Plants store their carbohydrates in the form of starch, which is usually inside a tough cellulose wall. When we chew food, the cellulose walls are crushed and the digestive juices can get to the starches. Heat will also break up the cellulose walls, but when this is done, many of the nutrients exposed to the heat die. The cellulose is used by the body as bulk or roughage needed for normal intestinal functions like peristalsis. As a rule, people do not get enough roughage or fiber in their diets, and part of the reason is because we do not eat enough raw food (cellulose is fiber).

The human body will generally burn a carbohydrate before it will burn a protein, but it is better if the body burns carbohydrates for energy and leaves protein available for more important tasks like tissue building and repair. Many of the modern diets explain the many benefits of protein and form the conclusion that high protein diets are best, but this misconception. If health and a feeling of well-being are to be achieved long-term, carbohydrates should become the staple of our diets. There are two classifications of carbohydrates, and this must be understood. When people advocate high protein diets because carbohydrates are fattening and of little nutritional value, they are referring to carbohydrates made of simple sugars. These are agreeably negative for the body. Complex carbohydrates, like whole grains, are fabulous for the body and really what the body was created to live on.

Classification of carbohydrates

Carbohydrates are traditionally classified as either simple or complex. A simple sugar contains just one sugar molecule. A complex sugar is made of a strand, or chain, of sugar molecules. It was believed that simple sugars were digested much more quickly because they did not have to be broken down, but new research has proven that this is not the case. Even if it is true, the rate of digestion is not as important as the fact that the carbohydrate is digested in the end. As a rule, it is much better to use foods that are complex carbohydrates than those that are simple carbohydrates, or simple sugars. Most simple sugars contain no nutrition, meaning they are empty calories. Honey, maple syrup and molasses are examples of simple sugars that are not empty calories. The key of a good vs. bad carbohydrate is the amount of nutrition it contains, and, with very few exceptions, most simple sugars originate from complex carbohydrates. They become simple sugars through refining and processing, both of which remove the nutritional value. As a rule, we want to avoid simple sugars. In the case of honey, maple syrup and molasses, the darker and the closer to nature each is, the better it is for you because minerals create a dark color. Thus, the darker it is, the richer in nutrients it is. When you eat a complex carbohydrate, the saliva in the mouth begins digesting it. Digestion is the action of enzymes on a food in the intestine. No matter what form of carbohydrate you eat, the body must eventually break it down into an absorbable form. The body’s natural response is to convert carbohydrates into glucose. Glucose is a sugar. The intestine can

only absorb glucose, fructose and galactose. As the carbohydrate item reaches the stomach and small intestine, enzymes from the pancreas continue the digestion process, converting it into simple sugar so the intestine can absorb or assimilate it. Now you might think that if it is going to be converted to a simple carbohydrate anyway, why not eat simple carbohydrates? The answer is in the elements supplied in a complex carbohydrate. The body needs minerals, vitamins and enzymes to complete the digestion process, and if these are not in the carbohydrate when you eat it, the body steals them from other parts of your body. So simple carbohydrates really create nutritional deficiency.

Unused glucose is stored as glycogen

Any glucose that is not needed in the body is converted to glycogen by the liver. Glycogen is how the body stores extra glucose. It is normal for the body to store about 24 hours worth of glycogen in the liver, but after that, it converts it to fatty tissue and stores it in muscle. The liver will detoxify much better if the glycogen levels do not get too low, so meal skipping makes it hard for the liver to detoxify normally. When the body gets more glycogen than it can store in the liver, it stores it as fatty tissue. We have been trained to eat low-fat, but most of the fat on your body is an excess amount of glycogen because the majority of fat in our diets comes from simple carbohydrates in the form of potato chips, french fries, bread, cakes, cookies, ice cream, refined sugar (found in everything), and so much more. This does not mean we should eat more protein: it simply means we are eating the wrong kinds of carbohydrates. It seems as though too much glycogen and too little glycogen are negative, but it really isn't something you need to worry about if you are consuming the right kinds of carbohydrates. The body is very intelligent, but it does not know how to process items (like the simple carbohydrates listed) that were never intended to be put in the body. The body has a very intelligent, complex regulation system, so you don't need to worry about anything but eating the right kinds of carbohydrates.

Understanding calories

People today have been trained to look at food in terms of calories, but you will find that calories are not the most important factor in diet and weight loss. There are two main kinds of calories: "empty" and "armored." An empty calorie refers to a food that has no nutritional value. Foods like refined sugar, alcohol, soft drinks and refined foods hold no nutritional value. You can think of these as simple carbohydrates. Unfortunately, these sources of calories are the primary ones used in today's society. Armored calories are those that still contain nutrients. These would also be complex carbohydrates. Regardless of taste, carbohydrates produce four calories per gram, so how sweet something tastes is not going to determine its calorie worth. The body will always choose an armored calorie before it will choose an empty calorie, so empty calories are generally converted to fat. Because the typical American diet is almost totally filled with foods that are made of empty calories, you can see why so many people are heavier than they should be and why the high protein diets tend to initiate short-term results in weight loss. As stated previously, the answer is not more protein and fewer carbohydrates: it is simply to eat the right kinds of carbohydrates – complex (armoured) carbohydrates. Calories are not really

the issue – the source of the calorie is. If a calorie is going to be measured, it should only be in the sense of what is needed to balance the amount burned during exercise. In other words, it is much better to rate a food in terms of simple or complex carbohydrate rather than caloric value, because if the calorie is empty, it is going to be converted to fat. But calories are not rated in terms of empty or armored in modern terms. Thus, if a diet is balanced with wholesome foods, calories are irrelevant. It is true that if you are eating fewer calories than you are burning, you will lose weight. The problem is, if you are concentrating on caloric value instead of whether it is a simple or complex carbohydrate, you are not going to get any nutritional value out of your food item. If there is no nutritional value, it is an empty calorie, meaning it will be converted to fat. Since you didn't get any nutrition, you won't have any energy to burn it off. People who count calories may look thinner for a while, but when they finally become depleted enough of nutrition, the metabolic rate in their cells will slowly down, the glands become imbalanced, with the final result of chubby fat and loose skin. If you are eating complex carbohydrates, you don't have to exercise your butt off because your body will burn them off automatically. That's right, your metabolic system works when the nutrition provided in complex carbohydrates is supplied. How ingenious of God, huh? The same foods that create the greatest amounts of fat also contain the elements to increase the metabolic rate! Most people have a slow metabolism because most of the calories they eat are empty, and their metabolic system has become weak due to a nutritional deficiency. A healthy metabolism is required to burn calories, but your metabolism requires nutrition to function. When you eat a food that is high in armored calories, you will automatically get the nutrition needed to supply the energy required to burn the calorie back off. In other words, the nutrition provided in an armored calorie generally increases the metabolism. Of course, most people want to burn calories and have a high metabolism without any exercise, but exercise is a primary factor in regulating metabolism. You don't have to exercise excessively, though. Originally, people worked in the fields and walked. This was exercise, but nothing like what people have to do today. If you find you need to count calories in order to keep your weight in check, you are clearly eating the wrong kinds of calories. If you find that you have to exercise excessively to keep your weight in check, take that time you were using to count the calories in everything you ate and invest it into knowledge that will help you pick out complex carbohydrates rather than simple, empty calories.

How are carbohydrates used?

Think of the body as an engine that must have gas to burn in order to move. When carbohydrates are burned (oxidized) by the body tissues, energy is produced for movement and heat is released in order to attain body temperature. Glucose is the form of carbohydrate found in the blood. A carbohydrate can only pass through the intestine wall if it is in the form of glucose, fructose or galactose, remember? When a carbohydrate reaches the glucose level because the proper enzymes have acted on it in the digestion process, it is ready for assimilation into the blood stream.

Carbohydrates are used for the following tasks:

1. Carbohydrates provide an economical and quick source of calories.
2. Spare protein can be used for more important tasks, like tissue building and repair.
3. Lactose encourages the growth of favorable intestinal bacteria, has laxative properties, and enhances absorption of calcium.
4. Cellulose provides fiber or fecal bulk.
5. Glucose is the source of energy for the nervous system. (Nerves can only use glucose, which is why low blood sugar can result in mental confusion.)
6. Glycogen stored in the liver helps it to detoxify.
7. Carbohydrates aid in complete oxidation of fats so ketones are not created. When fats do not oxidize normally, it creates acidosis in the body known as ketones.

What are the effects of excess carbohydrates?

Remember that carbohydrates cannot really be overdone if they are used in a complex form. This means you can't really eat too much. If used in the form of simple sugars, the following can occur:

1. Excess carbohydrates increase the incident of dental cavities because microorganisms living in the dental plaque convert sugar into acids, which attack the tooth enamel.
2. They cause obesity because more calories are ingested than are expended, and nutrition needed to raise the metabolism has not been supplied.
3. They irritate the intestinal mucosa (irritate ulcers).
4. They depress the appetite.
5. They increase blood triglyceride levels.
6. They will cause malnutrition if the carbohydrates are eaten in form of empty calories.

NOTE: While it is true that simple sugars (candy) will give you an energy boost (sugar high) faster than a complex carbohydrate (fruit or organic bread), the simple sugar creates a spike in your metabolic process and sugar levels that eventually overstress the glands, especially the pancreas. Simple sugars also deplete the body of nutrients, making you feel weaker when they wear off while complex carbohydrates supply nutrition and have a longer lasting effect without the insulin spike and glandular depletion.

Refined sugar, the worst carbohydrate available

If there were just one food that should be eliminated from the earth, it would have to be white sugar. A comprehensive report can be found in Nancy Appleton's *Lick the Sugar Habit*, but here is the short and sweet of the book. Refined sugar used to be milled primarily from cane sugar and sugar beets. But in the 1970's high fructose corn syrup was introduced, and it now makes up more than 50% of the total sugar consumption. If you stop and think about it, sugar is practically in everything you eat and many things you never thought contained sugar. Meat packers feed sugar to animals prior to slaughter to improve the flavor and color of cured meat. Sugar is often added to hamburgers sold in restaurants to reduce shrinkage. The breading on many prepared foods contains sugar.

Most breads contain sugar. Before salmon is canned, it is often glazed with a sugar solution. Some fast-food restaurants sell poultry that has been injected with a flavorful honey solution. Sugar is used in the processing of luncheon meats, bacon and canned meats. Sugar is found in such unlikely items as bouillon cubes and dry roasted nuts. Sugar is found in beer, wine, champagne, cordials and other alcoholic drinks. Sugar is generally added to the syrup in canned fruits. Peanut butter and most dry cereals contain sugar. Some salts contain sugar. Almost half the calories in ketchup comes from the added sugar. More than 90% of the calories in a can of cranberry sauce come from the added sugar. Start reading the labels, and you will be surprised at how many foods contain sugar. Without knowing it, you are consuming enormous amounts of simple carbohydrates. White sugar, as you see it for sale in the grocery store, is made up of two simple sugars – glucose and fructose. When ingested in a whole format as a carbohydrate, fat or protein, foods with sugar also contain chromium, manganese, cobalt, copper, zinc and magnesium. These are the minerals needed by the body to actually digest and metabolize the sugar, so it is burned rather than turned into empty calories, which is what refined sugar is. Modern processing makes white sugar hard on your body because the processing strips all the nutrients from the sugar, not to mention the chemicals used to make it nice and white. When you eat sugar in the refined form, the digestive process must steal the minerals needed to digest these sugars from your body. This is a very big problem because most people are depleted of essential nutrients to begin with, and sugar is in so many products that it would require an enormous amount of reserves to compensate for the depletion occurring each time sugar is eaten. When sugar is supplied without its minerals, meaning as a simple glucose rather than a complex carbohydrate, the body loses its need to convert foods into glucose, which makes the body dependent on it. Thus the constant sugar craving for those who eat it. It really is a dependency. The FDA considered it a drug in the 1980's, but could not take it off the market for fear of rioting! If you don't think sugar is as addictive as any drug and as much of an influence on your brain and mind, just try and stop using any form of it for a week and see how you do. Remember that sugar is in everything, even ketchup and chocolate, so no cheating. A no-sugar diet is a no-sugar diet. Read the labels: any word that ends in "-ose" or any form of fructose or corn syrup is a sugar you don't want. If you have any yeast or candida problems, sugar is the one thing (along with antibiotics) you want to avoid. Sugar feeds yeast and infection, especially if that infection is caused by yeast or parasites. The bacteria that create cavities and bad breath live on sugar, even natural sugars such as the ones found in fruit, so avoid sugar if you have mouth problems until you can destroy the bacteria in your mouth. Natural sugars as found in complex carbohydrates (fruits and vegetables) are not a problem unless you have severe bacteria such as those that live in the plaque on teeth. If you need a sweetener, look for honey grown in your area that has not been refined. Molasses and maple syrup are also a natural source of sugar, but you want to get the darkest form possible. The darker it is, the less refined it is. Sweet products that are not refined, like honey, molasses and maple syrup, have a dark color because they have not been stripped of the minerals required to break the sugar down in the body. Stevia is also beneficial and even cane sugar is all right for some people if used in small doses. Concentrations of sugar in a natural form such as the ones mentioned are not good for the body in large quantities or if used too often because they cause a spike in insulin and that eventually disrupts the metabolic system and pancreas. I understand that

many people don't believe they can cook or bake without white sugar, but that concept is not true. And brown sugar . . . well, it is the same thing as white sugar except it has added chemicals and coloring so it will be more moist. You can find natural cane sugar, though. Let's face it, we need some kind of sugar to make apple pie, right? Besides the fact that sugar creates a terrible chemical reaction in the body, it is as addictive as any drug without the legality issues, and it is practically free considering the cost of most drugs (making it the drug of choice). Sugar also destroys the pH balance in the body. It does this primarily by interrupting the calcium/phosphorus ratios. In nature, any item with a high content of sugar also contains a high content of calcium or at least the minerals needed to buffer the effects of the sugar. When you consume refined sugar, the reserves of minerals are depleted, and calcium is one of the most affected. How many people are suffering from diseases that are calcium related today? Bone problems, digestive problems, teeth problems, infections and many diseases are directly related to calcium imbalance. When you consider that calcium is the alkalizer in the body and almost every disease, certainly every modern killer disease, flourishes in an acid environment, you begin to see the problem. White sugar leeches calcium from the body, but how many of these people have been told that refined sugar will further deplete it and make most calcium supplements ineffective? Just as I feared. Tooth decay, hiatal hernia syndrome, acid indigestion, osteoporosis, nervous problems, mental illness, heart problems, constipation, mouth and skin disorders, beriberi and pellagra are just some of the illnesses directly related to the consumption of refined sugar. Never mind the fact that it depletes the body of other needed minerals, especially B vitamins. You be the judge of how strict you are willing to be with your sugar intake, but if I had one food that I was going to start eliminating from my diet, it would be refined sugar of all kinds. Don't forget to check the labels: it is in more items that you will believe.

Artificial sweeteners – worse than refined sugar

Many of you can honestly say you avoid sugar pretty strictly. Unfortunately, your reasons are not health related but calorie related. There is a sugar alternative called aspartame that so many have learned to use because it is considered "diet." In this case, diet means low-fat, and this was a blessing in disguise because fat is such a problem today, especially in the US. The bad news is that aspartame, also known as Nutrasweet, Equal, Spoonful, Benevia, NatraTaste and many other names is worse for you than the horrible sugar described above. Aspartame is actually a drug that was created to help relieve ulcers. It was found, by mistake, to be 128 times sweeter than sugar, which meant much less could be used to achieve the same level of sweetness. What you have not been told is that Aspartame or Nutrasweet is made of aspartate (40%), phenylalanine (60%) and methyle esters (10%). These don't sound too bad, do they? I mean, two of them are amino acids, which are naturally occurring in most proteins, so how could that be bad? Science has insisted on extracting or creating various single-form nutrients, and aspartame is one of the consequences. Aspartate is classified as an excitotoxin because if you use too much it becomes a deadly neurotoxin, which literally excites neurons in the brain and spinal cord to death. Aspartate in single form has caused brain tumors in animals, and extensive studies in humans have shown it to cause headaches, seizures and retarded brain development in children. Phenylalanine has been shown to penetrate the bloodbrain

barrier and be transformed into dopamine. This is the exact opposite of taking cocaine. Methyl is oxidized by the body into formaldehyde, a deadly neurotoxin, carcinogen and embalming fluid used for preserving tissue. Over 75% of all complaints to the FDA are related to aspartame use. Filed complaints include but are not limited to: addiction, anxiety, blindness, blurred vision, depression, dizziness, fatigue, hearing loss, insomnia, joint pain, nausea, seizures and spasms. The point is, 100 million Americans consume more than 5,000 tons of aspartame in the form of Nutrasweet and its other labeled names each year, (never mind use in other countries) yielding the producer of aspartame over $736 million in sales. More information can be found at www.aspartameispoison.com or in Dr. H.J. Robert's recent book, *Aspartame Disease: An Ignored Epidemic.*

Processed flour – the second worst carbohydrate available

Wheat is the most common grain used in the modern world. We see it primarily in the form of white flour. It is true that wheat – natural, whole grain wheat – can be very nourishing to the body, but I guarantee that you are not getting natural, whole grain wheat in any product purchased at your local grocer. Even the products that tell you the product is natural and made of wheat are a twist of advertising. Naturally, wheat contains an outer shell called the bran. It is high in fiber, B vitamins and minerals, and makes up about 15% of the total kernel. The germ, or the sprouting portion of the kernel, is the next layer. It is high in vitamins B and E but only makes up about 3% of the kernel. The endosperm makes up 80 – 85% of the kernel. The endosperm is a starch or a carbohydrate. When you use wheat as a whole kernel, meaning all parts of it, the wheat kernel is balanced, but modern producers take wheat through about twenty steps before selling it to you as white, refined flour. These steps include but are not limited to heat which destroys and oxidizes the elements in the flour. The flour becomes a free-radical at this point (free radicals are the main cause of aging). Bleach, acetone and peroxide are used to make the flour nice and white? For every slice of white bread, you might as well take a sip of the bleach in your laundry room and smoke a pack of cigarettes to get a healthy dose of free radicals. Oh, you wouldn't do that? Not unless it was in the form of white bread, anyway. After the wheat kernel is refined, there is no nutritional value. I know, the label and research indicates that there is some nutritional value left, but you are not told that what is left after the refining process is not usable. In other words, after the refining process, the body cannot actually extract the supposed nutrients and use them because they are also attached to carcinogenic compounds accumulated during the refining process. This is the reason you have heard me say that if man has put his hand to it in any way, you might as well call it worthless. The purpose of eating to begin with is to supply the body with nutrition, not to fill your stomach. Food is supposed to be a carrier of nutrition, so eating would automatically supply your body with nutrition. If a food does not supply the body with nutrition, it will deplete the body of nutrition. There is no middle ground. You are either supplying or depleting it any time you eat anything. Everything you put in the body has to be digested, and this requires nutrition. If you didn't supply the nutrition needed for digestion in the food, the body will use any reserves you have. The problem with using the reserves is that it leaves nothing for your organs and glands and body functions, and this is where symptoms of disease become apparent. Actually, the problem is more severe than that because most people don't have any reserves to begin with. There is a

saying that “The whiter it is, the deader it’ll make you.” You can see that the food item is not always the issue, certainly not as much of an issue as the process that food undergoes before it reaches the table. Wheat is naturally a wonderful, nutrient-rich food, but after processing, it becomes a slow death trap. Don’t assume you can go to the grocery store for whole wheat products; you may need to find a health food store or order it through a co-op. All grocery stores are not the same, though, so yours may have some of the items others don’t carry. Of course, nothing beats making it yourself. You can get all organic ingredients and put it all in a bread maker. You don’t have to sit home and wait for it.

The best carbohydrates

- Grains are the best source of carbohydrate. Whole, unprocessed, unrefined grains. Wheat, barley, couscous, bulgar, rice – there are many to choose from, and there are many ways to prepare them. Your meals should revolve around the whole grains you wish to eat that day with vegetables as your side items and meat as another side item a couple times each week.
- All raw fruits. The longer they are allowed to stay on the vine or tree for maturity, the healthier they will be for your body. If a fruit is not allowed to ripen on the tree, the enzymes never mature.
- NOTE: Any fruit (or vegetable) found in a can is of little value to the body. Frozen fruits and vegetables are just a little better and homemade, canned foods are even better, but none of these choices compare to fresh by any means on any scale. Fresh, raw fruit is one of the body’s favorite carbohydrates, especially in the morning or when you are really hot from working hard.
- All vegetables, especially raw enables the body to get the needed cellulose.
- Breads are good sources of carbohydrates as long as they were made with organic, whole grains. Health food stores carry various breads; Ezekiel Bread is the most common. To be a true carbohydrate, a bread must be made with freshly ground grains and eaten very soon after it is made. If ground grain sits too long before it is used, it begins to oxidize.
- Pasta is a moderate form of carbohydrate as long as the grains used were not processed before the pasta was made. This eliminates all the pasta in the supermarket and in restaurants because they use bleached, processed flour. Pasta made of whole grains can be found in health food stores as well.

SUMMARY: About 25% of your diet should be protein (greens, grains, nuts, seeds, meat [fish, meat, poultry if you are a meat eater]). The rest should be fruits and vegetables, also known as complex carbohydrates according to the description in this book. Fruits are best for the body if they are raw. Vegetables should be eaten 30% raw, with the rest steamed or juiced, and very few cooked. You should juice your own vegetables with a Green’s Plus, Champion or Norwalk juicer (listed in the order of importance). If you can purchase organic vegetables – that is obviously the best choice – but if you can’t, just get a juicer and juice those you can get at the grocery store. There are liquid solutions you can purchase to soak the fruits and vegetables in for 30 minutes so the pesticides will be deactivated. Juicing will be covered in more detail as we continue.