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The Stages of Nutrition (Part 1)

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The Stages of Nutrition

To fully comprehend the complexity of nutrition one must understand the different stages in which our body processes and utilizes foods and supplements. This enables us to understand qualitative aspects of diet and supplementation. The six stages of nutrition are diet, digestion, absorption, circulation, assimilation, and elimination.

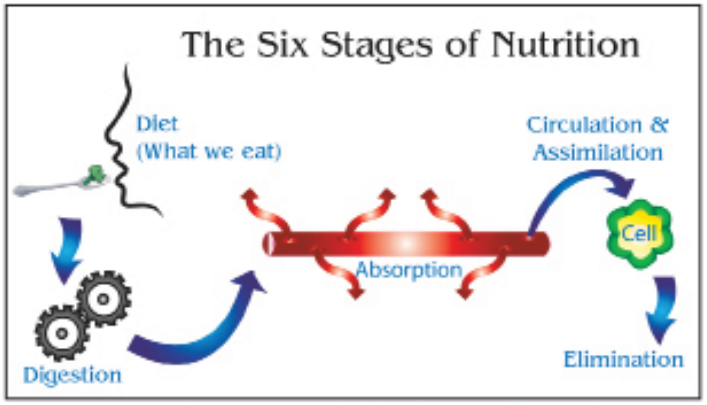
Diet

The first stage of nutrition is the food we choose to eat. This has become an increasing problem since the 1880's. Man's diet has rarely been optimal throughout history. Dr. Roger Williams uses the illustration of the yeast plant to drive home how difficult it is to provide optimal nutrition to the cells of the body and to human beings in general:

"If a single yeast cell is given a highly favorable environment—plenty of air, water, and a good assortment of nutrients, and a suitable temperature—it can easily produce a colony of 100 yeast cells in twenty-four hours. This means that a single small cake of compressed yeast, starting on a Monday morning with all the air, water, and nutrients it needed would, by the next Monday morning, weigh more than a billion tons!"

"From this simple example it follows that *in nature* yeast cells are always hampered by inadequate environment and imperfect nutrition. Otherwise, they would have engulfed the earth long ago. A fruit juice, for example, is a medium in which yeast cells can grow and multiply, but it is far from an ideal medium. By carefully supplementing it with minerals, amino acids, and vitamins, it can be vastly improved. Even in a commercial yeast factory, it is not practical to put into the fermenters the best possible nutritional medium."

The reason I share this illustration is because so many people will tell you they eat a "good diet" or an "excellent diet." Typically these are the individuals who can not understand why they do not feel well. The simple truth is that all of us can probably eat a much *better* diet than we do and the result would be a better functioning mind and body. This is one of the great lessons I have learned working in the nutritional field for four decades. There is always room for improvement.



Simply cooking food has been shown to significantly deteriorate the nutritional value of foods. However, since the advent of food processing on a major scale dietary intake is no longer merely suboptimal but outright inadequate for optimal health more often than not.

The 1880's mark the beginning of diets largely based on white flour, white rice, and sugar. Large quantities of vitamins, minerals, and amino acids are removed from these foods. They are then "fortified and enriched" with a handful of synthetic vitamins and inorganic minerals. One wag commented that this form of enrichment is equivalent to taking a twenty dollar bill from someone and giving them ten pennies and telling them they have been enriched. It is no accident that the identification and clarification of nutrient deficiency diseases coincided to a large extent with the introduction of commercial food processing.

More recently, the quality of whole foods has also declined substantially due to the erosion of topsoil and the use of artificial fertilizers rather than manures and compost.

The 1940's saw a dra-

matic increase in the use of antibiotics, pesticides and herbicides which contributed to the nutritional decline by leaving residues of toxic substances on and in plant and animal tissues. Many of these substances are very strong anti-nutrients. For example, there have been dramatic declines in the vitamin B12 content of foods. Between 1960 and 1990 the B12 content of beef liver declined from 122 mcg/100g in 1960 to none detectable in 1990. This decline is believed to be tied to use of artificial fertilizers which do not contain sufficient cobalt, an essential building block of vitamin B12, and also due to the widespread use of antibiotics in farm animals and other practices which have mutated or killed the bacteria (P. Shermanii) which once synthesized vitamin B12.

More recent innovations of food processing include irradiation to prolong shelf life and genetic modification of foods. A number of studies of genetically modified foods have been deeply disturbing with regard to the health effects of animals consuming these foods.

Today few people consume a good diet. As some have observed the Standard American Diet is SAD. Unfortunately, this is only the first stage in nutrition, yet already we see impoverished foods, altered in ways which disturb and damage the digestive tract and other tissue structures involved in delivering optimal nutrition to the cells.

In order to obtain adequate diet one must obtain what we call the "chain of life," that is, all the essential nutrients in adequate quantities on a regular basis. Even minimal processing can lead to weaknesses in the "chain of life" which can result in a deterioration in health and the onset of chronic degenerative processes.

The purpose of a basic multiple like Formula IV or Sports 30 is to provide as many of the links in the "chain of life" as possible from the best sources available. Thus Sports 30 has concentrates from liver, brewer's yeast, sea vegetation, grains and legumes with the addition of readily absorbable chelated minerals.

Water and fiber are highly significant components of the diet for reasons which will be explained later. This is in spite of the fact that neither water nor fiber make significant nutritional contributions.

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Williams, Roger, *Nutrition Against Disease*, New York: Pitman Publishing Corporation, 1971, 28-29.

Jaffe, Russell, and Donovan, Patrick, *Health Assurance: Your Livable Health Plan*, Prepublication for Professionals, Chapter VII, 19-20.

Digestion

Simply obtaining adequate nutrient intake does not guarantee that we will be able to utilize these nutrients. They must also be digested. Digestion consists of breaking food into small enough particles that it can be absorbed easily into the blood stream without triggering allergic responses. This is accomplished through several steps.

Fermentation

Firstly, the nature of the food we consume determines how easily it will be for the body to break down and absorb. Most traditional cultures consumed large quantities of fermented foods such as cheese, yogurt, buttermilk, sauerkraut, miso and tempeh. These fermented foods are much easier to digest than the foods from which they are derived.

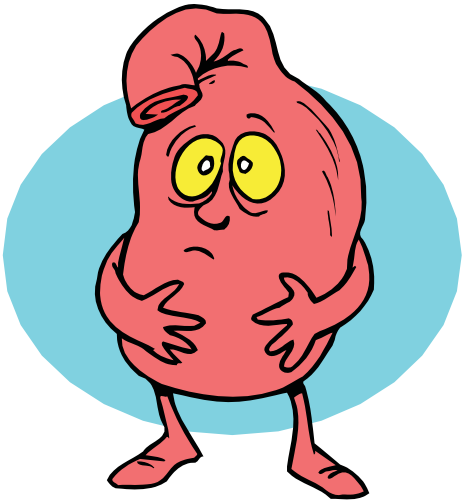
Sally Fallon in *Nourishing Traditions* observes the benefits of fermented foods: "Like the fermentation of dairy products, preservation of vegetables and fruits by the process of lacto-fermentation has numerous advantages beyond those of simple preservation. The proliferation of lactobacilli in fermented vegetables enhances their digestibility and increases vitamin levels. These beneficial organisms produce numerous helpful enzymes as well as antibiotic and anticarcinogenic substances. Their main by-product, lactic acid, not only keeps vegetables and fruits in a state of perfect preservation but also promotes the growth of healthy flora throughout the intestine."

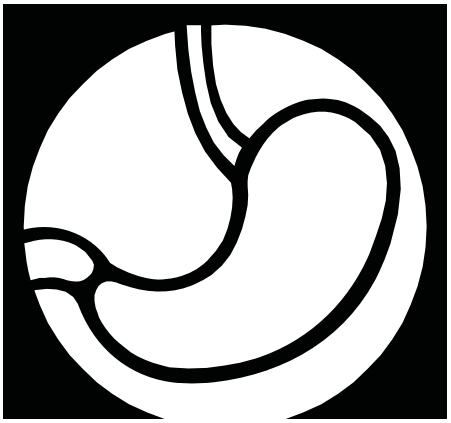
Raw Foods

Traditional diets also frequently contained generous quantities of raw foods. The enzymes in these foods are released in the upper part of the stomach and facilitate the breakdown of the foods. The incorporation of fermented foods into the diet accelerates this process.

Chewing

The next step in the digestive process is thorough chewing of foods. Chewing mechanically breaks down food into smaller pieces increasing the effectiveness of digestive enzymes. The saliva also contains digestants which aid in food breakdown. There is a reference in the medical literature to an individual who broke out in





hives with anything he ate. When his physicians instructed him to to chew his food thoroughly, his allergic response to all foods disappeared. Unfortunately, we live in a society where everything is rushed and most of us do not take adequate time to relax, chew our food and enjoy our meals.

Saliva is filled with carbohydrate digestants. Proper digestion of carbohydrates requires thorough chewing.

Chewing is also critical when raw plant foods are consumed. The body contains no enzyme for the breakdown of cellulose or plant fiber. In order to extract the nutrients from raw foods they must be mechanically broken down. Chewing accomplishes this and also mixes the foods with digestive enzymes.

Blending foods or breaking them into tiny pieces with a piece of equipment like a Vita-Mix will break down cellulose and release nutrients for digestion and absorption. Blended foods are not mixed with salivary enzymes so it is a good idea to ingest them slowly and try to mix the liquids with saliva.

Hydrochloric Acid

Food must next enter the stomach. This is where hydrochloric acid and pepsin break down protein. Without hydrochloric acid, protein and minerals are incapable of being utilized for nutritional purposes by the body. This is the tragedy of the antacid craze in the United States. Millions of people take antacids which knock out hydrochloric acid for as long as an entire day. How can they possibly digest their food properly?

Without hydrochloric acid, food will often sit in the stomach and ferment. The result is the common cluster of symptoms associated with low stomach acid including bloating, belching, burping, and bad breath.

Food is often contaminated by potentially harmful parasites, bacteria, or fungi. The hydrochloric acid in the stomach is the most important defensive barrier against these organisms which can threaten our health and well-being. Failure of hydrochloric acid production results in parasitic invasion of the system by viruses, bacteria, and fungi.

People become deficient in hydrochloric acid for a number of reasons. Firstly, digestive substances including both hydrochloric acid and pancreatic enzymes tend to decline with age. When an older individual begins to complain of digestive problems the overwhelming probability is that he or she is deficient in digestive substances rather than experiencing excessive stomach acid. This loss of stomach acid induces malnutrition and hastens the physical deterioration of older individuals. Use of antacids accelerates the degenerative process.

Illness can lead to low stomach acid. In one study the flu reduced stomach acid production for several months.

Malnutrition can also play a role in loss of stomach acid. The production of stomach acid is a very demanding physiological process dependent upon a great number of nutrients. Deficiency of only one or two nutrients can result in significant deterioration of stomach acid production.

Stress, including lack of sleep and chronic pain, can also result in decline in stomach acid secretion and inability to properly digest foods. Supplements of digestive aids are often helpful here.

Consumption of iced beverages with meals can result in a temporary suppression of stomach acid. Iced beverages are used to stop stomach acid secretion in emergency medicine.

Stomach acid secretion can be encouraged by enjoying a warm soup which contains some protein prior to meals. Sometimes people find digestive bitters, available in most supermarkets, helpful.

GNLD's Betagest is a concentrate of hydrochloric acid and pepsin derived from beet stems and beet roots. The tablet is designed to release slowly to avoid irritating the stomach lining and has a targeted delivery technology so it will release in the stomach. Dr. Hugh Tuckey who worked with hydrochloric acid supplementation for over 30 years found that the natural hydrochoric acid such as that found in GNLD Betagest corrected deficiencies while other forms often did not.

Enzymes

Food moves from the stomach to the small intestine. Here the secretions of the pancreas and the gall bladder complete the breakdown of foods in preparation for the next step in the nutritional process which is absorption.

Pancreatic enzymes are a critical link in the digestion of foods. There are actually two sources of enzymes which can help us digest our foods. The first is enzymes within raw foods which are released when the cell walls are broken. These enzymes do most of their work in the stomach and contribute significantly to the proper breakdown of foods.

The second source of enzymes is the secretions of the pancreas. Pan-

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creatic failure leads to a long list of symptoms including diabetes and severe reactivity to foods. One classic symptom of low pancreatic enzyme secretion is a balloon syndrome in which an individual feels like he or she is slowly blowing up like a balloon after consuming a meal.

Supplementation with pancreatic enzymes has been shown to decrease both elevations of blood sugar associated with diabetes and also reactivity to foods. Enzymes are known to have a profound anti-inflammatory effect.

Enzymes are not only important for the role they play in allowing us to extract nutrition from our food, and for their anti-inflammatory role in the body, but they may also play a role in life span. Dr. Edward Howell, a pioneer in the area of enzyme studies developed the following axiom as a result of his enzyme studies: "The *length of life* is inversely proportional to the *rate* of exhaustion of the *enzyme potential* of an organism. The increased use of food enzymes promotes a *decreased rate* of exhaustion of the enzyme potential."

GNLD Enzyme Digestive Aid is a combination of plant derived enzymes with a wide range of pH activity in a capsule designed with GNLD's Targeted Delivery Technology to release in the small intestine.

It is important to note that supplements can also be designed to digest more easily. The digestability of protein is such an important issue that the government has established what is called the PDCAAS as a measure of protein quality. The letters stand for Protein Digestability Corrected Amino Acid Score. A perfect score is one, which is met or surpassed by all GNLD protein products.

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