The Good, the Bad and the Ugly

"Eating for an Enzyme Surplus"

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All life started with chemistry, the science of action, reaction, combination, separation and creation. Enzymes make chemical reactions happen fast and at temperatures lower than would otherwise be required. Without enzymes, human life, and all other organic life for that matter, is not possible. Enzymes are the machinery in every cell of every organ in the human body. Enzymes coordinate the process of reducing food to essential nutrients, reduce or eliminate chemical toxins by breaking the molecules apart, make all the products of cellular manufacturing, maintain the integrity of the cell membrane and the organelles inside the cell (Figure 1), and direct cell growth and repair.

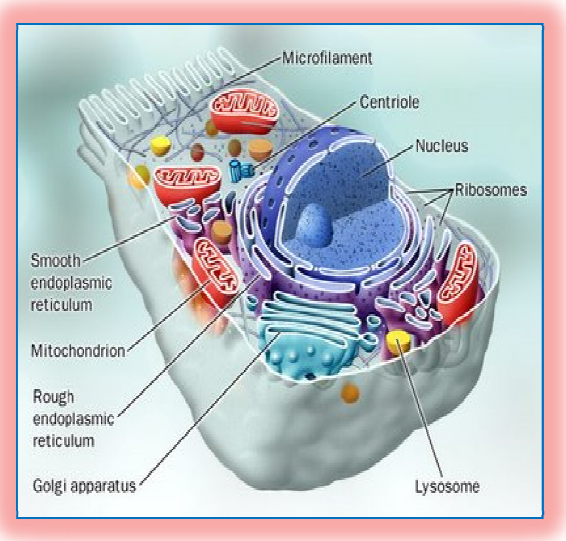

Figure 1

Enzymes participate in chemical reactions, but are not changed in the process. Enzymes can be destroyed, however, by many things, including excess heat, organic acids and changes in the pH in the place where they function. This means there must be a constant supply of new enzymes available to sustain and support cellular metabolism. Maintaining a diet low in calories, low in alkali, low in acid and moderate in physical activity is the first step in supporting adequate enzyme production and an enzyme surplus, as discussed in the November issue of Natural Triad.

An enzyme surplus means there are adequate enzymes available at all times to support metabolism at the speed of light. An enzyme surplus is required for optimal health. It is estimated that 1,000,000 enzymes are needed every minute of every day to coordinate the totality of cellular metabolism. The cell is programmed to make new enzymes to replace those that are destroyed. According to the laws of homœostasis,

however, enzymes cannot be created any faster than they are destroyed. Also, enzymes will not be maintained in amounts in excess of those being used, as this requires too much energy. Enzymes, therefore, cannot be banked. If enzymes are destroyed faster than they are created, enzyme inventory will be depleted. A dwindling supply of enzymes, otherwise known as enzyme deficit, paves the road to sickness and disease.

When food is consumed, the chemical structure of the plant or the chemical structure of the animal that ate the plant must be broken down into smaller pieces by enzymes, in order to nourish the cells. It is important to understand that the chemical structure and metabolism of plants, the chemical structure and metabolism of animals and the chemical structure and metabolism of humans is not the same. Plants, animals and humans live under different conditions and circumstances. Plants and animals are not on this earth to serve the nutrient needs for humans, pests, or microbes. Likewise, humans are not on this earth to serve the nutrient needs for plants, animals or microbes. Each living thing is on this earth to sustain and support its own life and contribute to the entire ecosystem in a unique way. Plants are immobile and harness the power of the sun's energy for photosynthesis. Plants structure with heavy metals and produce oxygen as a waste product. Humans must eat food for energy, structure with light minerals, and produce carbon dioxide as a waste product. Plants contain much higher amounts of potassium, phosphorous and nitrogen than do humans. Plant fiber is cellulose, a starch. Human fiber is collagen, a protein. Animals are either herbivores or carnivores and as such have enzymes to process raw plant matter or raw flesh. All this means that plant chemicals are for plants. Plant chemicals assure survival of the plant and provide protection from pests, microbes and natural predators. Animal chemicals are for animals and ensure survival in the environment in which they live. Human chemicals are for humans and ensure daily function and a healthy system of defense.

Bound within the structure of plant, human, or animal chemicals are the basic units of all life; minerals, amino acids, fatty acids, simple sugars (monosaccharides), and vitamins. It is these "piece parts" that connect all organic life and matter. **The basic elements of life are recognized across species as safe and necessary for survival. Chemical exchange between species has toxicity.** To achieve optimal health, a human being must know the safest way to obtain the "piece parts" from the chemical structure of the food being consumed. This requires proper selection and processing of

food, enabling delivery of building blocks to the cells, using the least amount of energy and producing the least amount of waste. Heat is critical in this process, either heat from cellular enzymes or heat from the fire of cooking. With the aid of chromatography and enzymology, as explained next, several steps can be taken to achieve an enzyme surplus:

1. **Foods containing the least amount of toxicity should be selected for consumption.** It is estimated that every day, any given person is exposed to 10,000 different named chemicals in food that is consumed. These chemicals are not just from well known sources such as preservatives and dyes in processed foods, pesticide residues, or hormones and antibiotics in food from animal products not raised under natural conditions. According to Bruce Ames, PhD, from the Department of Biochemistry at University of California Berkeley, 99.9% of the chemicals to which the human body is exposed are 100% all natural, within the structure of the plant, whether organic or not. **And when plants are stressed or damaged, or don't have pesticide support, higher amounts of natural chemicals are produced as part of the plant's defense system.** With the aid of chromatography, 100,000 different chemicals have been identified in the plant kingdom. The structure of only ½ of these has been fully defined. The function of many plant chemicals remains unknown. Of those that have been studied, generally about two dozen of the chemicals in each plant variety have been shown to cause cancer in laboratory animals at high doses. There are 49 natural pesticides and chemicals in 100% natural raw cabbage, including glucosinolates, indoles, isothiocyanates, cyanides, terpenes, and phenols. A cup of pure, organic, roasted Arabica coffee has 846 volatile organic chemicals (VOCs) and contains 10 mg of caffeic acid, furfural, hydroquinone and hyrdrogen peroxide, all shown to interfere with DNA function in laboratory animals. In addition to pectin and Vitamin C, apples contain malic acid, formic acid and arsenic. Strawberries contain molds and salicylates. Apricots contain amygdalin and salicylates. Other toxic chemicals that have been identified in plants include estragole, solanine, nicotine, MSG (monosodium glutamate), methylxanthines, caffeine, theobromine, safroles, caffergic acid, chlorogenic acid and neochlorogenic acid. None of these chemicals are used in human metabolism, but perform important roles in the plant for circulation of

nutrients, temperature regulation, nutrient storage, cell communication, and waste disposal.

Some plants can be made safe to consume; others cannot and are to be avoided. An exhaustive list is not possible here, but the list includes all nuts, including coconuts, nut butters, nut oils and nut milks. Cyanide, which is the circulatory system in plants and found in all nuts and seeds, cannot be separated from the saturated fat in nuts, even with cooking. Cyanide prevents oxygen from getting to cells. A person who consumes nuts, nut oils, nut butters and nut milks slowly develops plaque in all tissues. Plaque in associated with all chronic disease.

2. **Food must be steamed, poached, braised, stewed, roasted, baked or slow cooked.** Plant and animal proteins are constructed with anywhere from 200 to 25,000 amino acids. Monosaccharides are locked within carbohydrate structures that are anywhere from 2 to 10,000 units long. Fatty acids are locked within fats, 6 to 22 units long. Minerals and vitamins are locked within the structure of all plant or animal chemicals, including in the proteins, carbohydrates and fats. Heat is required to not only aid the destruction of microbes present in and on all food, but to break chemical bonds of food structure and release individual amino acids, fatty acids, simple sugars, vitamins and minerals. If food is not cooked outside the body, it must be cooked by the enzymes inside the body. Cooking food once inside the body requires a lot of energy, diverting energy from more vital functions, like brain

processing, cell growth and cell repair. Eating food that has not been cooked increases the likelihood that undigested protein, undigested starch, undigested fat or undigested chemical debris remains in the blood system, the lymphatic system and even within the structure of the cells themselves. This unprocessed organic matter subjected to body heat becomes calcified and concretized in arteries, brain tissue, breast tissue, joint tissue, nerve tissue, prostate tissue, pancreas tissue, smooth muscle tissue, skeletal muscle tissue and any other tissue of the body, choking the manufacturing mechanism and preventing optimal cellular function. Use the heat of the stove or the oven to start the digestion process instead of the heat of the body. Flame broiling, char-grilling, flash frying, deep frying or pan searing is not recommended, as these types of cooking destroy or "denature" the amino acids, simple sugars and fatty acids in food and create "ash". The ash is heterocyclic hydrocarbons, heterocyclic amines and nitrosamines, which is additional toxic waste.

3. **Foods and substances that require more enzymes to process than can be supplied by the cells must be avoided.** Enzymologists have determined that a maximum of 45,000 to 50,000 metabolic enzymes are available in any given 4-6 hour period to fully process food and other substances. Metabolic enzymes are all types of enzymes, not just digestive enzymes. If food or substances are consumed that exceed enzyme capacity, an enzyme deficit will exist. No one lives well with an enzyme deficit.

   A serving size of corn or corn products, pork or pork products, shellfish, meat or milk with hormones, or artificial sweetener requires well over 50,000 enzymes to process. Acetaldehyde, in a serving of beer, wine, grain alcohol or a single cigarette requires 40,000 enzymes to process. A raw vegetable salad requires close to 40,000 enzymes. The MSG in kale and seaweed takes 30,000 enzymes to process. Whole grains require 30,000 enzymes, in large part because molybdenum and vanadium are present in the bran of a seed, providing a moisture barrier and protecting the seed from composting before it has time to germinate. Molybdenum and vanadium are trace minerals in the human body and are recycled in the course of metabolism, making additional supplementation unnecessary. Excess molybdenum and vanadium from food or supplements inhibits enzyme function in the cell.

Raw onions and raw garlic take 30,000 enzymes to process. Legumes and other podded plants, including soybeans, lentils, kidney beans, black beans, lima beans, green beans and peas require at least 15,000 enzymes to process because of cyanide, tough protein, including canavanine, and plant acids. Pods, like fruit, are the waste disposal system of the plant, where acid waste is stored. Canavanine is a plant amino acid that will substitute for arginine, an essential amino acid for humans, in every place where arginine is used cell metabolism, which is thousands of different enzymes and proteins. Enzymes that have canavanine instead of arginine do not work properly, to say the least. Faulty enzymes are not supportive of optimal health in a human body.

Dissolved carbon dioxide in water becomes carbonic acid when ice cubes form. Processing the carbonic acid in ice cubes and ice water requires 30,000 enzymes. Citric acid in citrus foods and in preserved foods takes 30,000 enzymes to process. Spinach, which contains oxalates, requires 30,000 enzymes to process. Each tablet or capsule of over-the counter remedy, herbal preparation, or pharmaceutical drug, whether natural or synthetic, takes 25,000 enzymes to process. Gluten takes 17,000 enzymes and methylxanthines in coffee, black tea and herbal tea, 15,000 enzymes to process. Cooked small navy beans, white pasta, onions, celery, leeks, asparagus and green pepper require less than 7,000 enzymes to process. A quick review of the list will demonstrate that it is far too easy to consume foods that easily exceed enzyme availability.

4. **Food must be thoroughly chewed inside the mouth before swallowing.**
Chewing mixes food with saliva. Chewing is necessary to fully "macerate" or liquefy solid foods. Amylase in saliva continues the breakdown of starch started with the cooking process. Chewing protein until it is fully macerated increases the surface area exposed to hydrochloric acid in the stomach and protease enzymes in the small intestine. Chewing food increases the likelihood of essential nutrients reaching the cells. Inhaling food without chewing reduces the chances of getting essential nutrients to the cells and increases the likelihood of undigested organic matter getting trapped in the body, leading, over time, to excess body fat or an inability to maintain healthy lean weight and structure.

5. **Wait 30 minutes after a meal before drinking water.** Drinking water with meals dilutes hydrochloric acid in the stomach, and digestive enzymes from the pancreas and small intestine. Diluting the digestive juices reduces the strength and efficiency of enzymes.

> ***Plants are not just food for animals……The world is not green. It is colored lectin, tannin, cyanide, caffeine, aflatoxin and canavanine.*** DH Janzen, Evolutionary Ecologist, Biologist - 1977

Food has an upside, because it contains the building blocks for human structure and function. Food also has a downside, because it contains chemicals unique to the plant or the animal from which it comes. The challenge is bring the upside and as little of the downside as possible into the body. No food is completely safe to consume and there is lots of room for failure in the multi-step process of separating cell nutrients from the chemical structure of animals and plants. It is true that the dose is the poison, and small amounts of chemicals in any given food may seem harmless. Toxicity, however, is cumulative. When the total unprocessed chemical burden, whether natural or synthetic, is tallied, meal after meal, day after day, month after month and year after year, it slowly adds up to chronic disease, in very insidious fashion, but likely with numerous daily symptoms. Every disease is associated with an enzyme deficit: cancer, stroke, heart disease, depression, bipolar disorder, erectile dysfunction, asthma, COPD, diabetes, arthritis, food allergies and sensitivities, Alzheimer's disease, dementia, MS, irritable bowel disease and hormonal issues. The best defense is eating food that is cooked, avoiding foods that cannot be made safe to consume, even with heat processing, and eating to create and maintain an enzyme surplus. Enzymes working at the speed of light support optimal health in a disease-free, symptom-free body. Eat for an enzyme surplus now! Don't wait for disease to reveal itself, as by the time disease shows up, it is much harder to reverse and often too late.

For further information about enzymes and enzyme surplus,
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