



## ENZYMES: A SECRET OF HEALTH AND LONGEVITY

**Table of Contents:**                    **Enzymes: A Secret of Health and Longevity by Dr. Gabriel Cousens, M.D.**

**See also:**                                **Vitalzym**  
**Dr. William Wong**

**Books:**                                    [Conscious Eating by Gabriel Cousens, M.D.](#)  
[Enzymes: The Fountain of Life by D.A. Lopez, M.D., et al.](#)  
[Food Enzymes for Health and Longevity by Dr. Edward Howell](#)  
[Enzyme Nutrition by Dr. Edward Howell](#)  
[Enzymes: A Drug of the Future by Dr. Hans Hermann](#)  
[Complete Book of Enzyme Therapy by Dr. Anthony J. Cichoke](#)  
[The Enzyme Cure by Lita Lee, Ph.D.](#)  
[Alternative Medicine: The Definitive Guide](#)  
[Enzymes and Enzyme Therapy by Dr. Anthony J. Cichoke](#)

**Articles:**

**Websites:**

**Audio/Video:**

**Publications:**

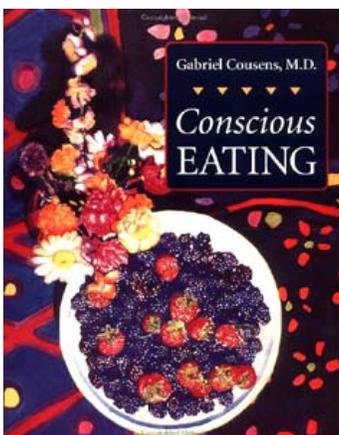
**Organizations:**                    **Biological Research Institute – Prof. Max Wolf and Dr. Helen Benitez**  
**Medical Enzyme Research Society**  
**Tree of Life Rejuvenation Center, [www.treeoflife.nu](http://www.treeoflife.nu)**

**People:**                                    **Gabriel Cousens, M.D.**  
**Dr. Edward Howell**  
**Dr. William Wong**  
**Howard Loomis, D.C.**

|                            |   |
|----------------------------|---|
| <b>Integral Nutrition:</b> | <b>Enzymes Are Essential to Life: Living Food, Living Bodies, Dead Food, Dead Bodies</b><br><b>Enzymes do survive the stomach acid.</b>   |
| <b>Conventional:</b>       | <b>Enzymes in Food Don't Matter</b><br><b>Enzymes are Useful in Industrial Production Only</b>  |
| <b>Terms:</b>              | <b>Subtle Organizing Energy Fields (SOEFs)</b><br><b>superoxide dismutase (SOD)</b><br><b>Food Enzyme Stomach</b><br><b>Pyloric Stomach</b><br><b>Law of Adaptive Secretion of Enzymes</b><br><b>Enzyme Preservation</b><br><b>Meso-Health</b><br><b>Pottenger Cat Study</b><br><b>Proteases</b><br><b>Amylases</b><br><b>Lipases</b><br><b>Glutathione Peroxidase</b><br><b>Leukocytosis</b><br><b>Proteolytic Enzymes</b> |

## Enzymes: A Secret of Health and Longevity

Source: Chapter 26 in *Conscious Eating* by Gabriel Cousens, M.D. (517-554)



**ENZYMES ARE ONE OF THE MOST IMPORTANT HEALTH FACTORS IN OUR FOODS.** The preservation of our enzymes is associated with better health, vitality, and longevity. In this chapter you will learn about food enzymes and how to preserve your own enzyme reserve. If you accept the importance of enzyme preservation, are you ready to change your dietary patterns to conserve them?

### I. Enzymes: a secret of health and longevity

- A. Enzymes are chemical protein complexes and bioenergy reservoirs
- B. Three main types of enzymes: metabolic, digestive, and food

### II. Importance of enzyme preservation

- A. Our bodies only secrete enough enzymes for each food we eat
- B. Enzyme energy is linked to SOEFs
- C. Enzymes decrease with age
- D. Animal research and enzymes

### III. The role of food enzymes in digestion

### IV. Enzymes for health

### V. Enzyme-deficient is a hard way to start life

### VI. How do we preserve our enzymes?

- A. Eating raw foods
- B. Live enzyme supplements
- C. Fasting

### VII. Not overeating

- A. Animal life extended by underfeeding
- B. Not overeating results in optimal health

### VIII. Enzyme supplementation: live plant digestive enzymes

### IX. Reasons to use enzymes

- A. Enzymes lost or destroyed in cooked foods
- B. Enzymes decrease with age
- C. Enzyme depletion during illness
- D. Digestive disturbances
- E. Enzymes help detoxify

### X. Food enzymes: a new perspective on food combining

**ACORDING TO MY NEW PARADIGM OF NUTRITION** set forth in *Spiritual Nutrition and The Rainbow Diet* and elaborated in this book, whenever we process foods in any way, we disorganize the **SOEFs (Subtle Organizing Energy Fields)** of the food, and hence, lower the life force. This manifests on the physical plane in a variety of ways. Enzyme destruction is one. According to Dr. Howell, whom many consider the father of food enzyme research in the twentieth century, *enzymes are both chemical protein complexes and bioenergy reservoirs*. In the physical body, as bioenergy reservoirs, they are analogous in their patterning to SOEFs. I think of them as high-energy vortex points which step down the cosmic SOEF energy into the body.

Dr. Robert G. Denkwalter, one of the first to synthesize an enzyme protein, says that enzymes are "embarrassing because they can do at body temperatures and in simple solution what we organic chemists can do only with corrosive agents and at high temperatures and with laborious processes." Dr. Troland, from Harvard University, one of the first scientists to put forth a living theory for enzymes, said, "Life is something which has been built up about the enzyme; it is corollary of enzyme activity." Chemists concede that only the living organism makes active enzymes. Dr. Howell points out that **enzymes are not simple chemical catalysts, but have this vital life force that initiates biochemical interactions**. He also notes that the capacity of an organism to make active live enzymes depends on the available life force of the organism. The corollary to this is that the enzyme activity of an organism is a way to

measure the life force of the organism. Ann Wigmore, the mother of the raw-foods movement in America, says that "**enzyme preservation is the secret to health.**"

Howell taught two key concepts: (1) enzymes are living, biochemical factors that activate and carry out all the biological processes in the body, such as digestion, nerve impulses, the detoxification process, the functioning of RNA/DNA, repairing and healing the body, and even thinking; and (2) the capacity of an organism to make enzymes is exhaustible. Therefore, on the biological level, how we utilize and replenish our enzyme resources will be a measure of our overall health and longevity. By understanding how enzymes work, we will understand why it is best to eat a higher percentage of Mother Nature's offering "*au naturel*."

There are three broad categories of enzymes: metabolic, which activate all our metabolic processes; digestive, for the digestion of food; and a relatively newly conceived category called food enzymes. Food enzymes are present in all live foods and serve the function of specifically activating the digestion of those foods in which they occur. Live foods contain a variety of metabolic enzymes as well, such as **superoxide dismutase (SOD)**.

There are an estimated 50,000 enzymes active in the human organism. Approximately 2700-3000 enzymes and their functions have been identified. Each organ has its own set of enzymes. Of the 50,000-plus enzymes, about 24 of them are digestive enzymes. The three main types of digestive enzymes are **proteases**, which digest proteins; **amylases**, which digest carbohydrates; and **lipases**, which digest fats. Mother Nature works in conjunction with us by adding what we call from our human-centered point of view "food enzymes" to each living element of nature. These food enzymes have the exact ratio of proteases, amylases, and lipases required to begin the digestion of the food for the body.

## Importance of Enzyme Preservation

THE RELEVANCE OF THIS GIFT OF MOTHER NATURE becomes more obvious when we explore what Dr. Howell called the **Law of Adaptive Secretion of Digestive Enzymes**. Based on research at Northwestern University and confirmed by many other researchers, the Law of Adaptive Secretion proposes that *the living organism will secrete no more enzymes than are needed for digestion of a particular food*. This means that if a food from Mother Nature comes into our system in its live form, filled with exactly the right proportion of food enzymes to begin digestion, then it will result in less digestive enzymes being secreted by our organism for the digestive process. Researchers found that when dogs were given cooked foods, after a week the enzyme content of the saliva greatly increased in order to digest the cooked foods. When the dogs were put back on their normal diet of raw foods, within a week the enzyme content of the saliva went back to its normally low level. The implication of these studies is that since the raw food contained the self-digesting food enzymes, the dogs did not have to use up their own enzyme reserves to digest it as they did with the cooked food.

Human research as far back as 1907 has shown that the type of enzymes secreted in the human system also depend on the type of diet. In that year Simon showed that the starch-digesting enzyme amylase in human saliva increased with a high-starch diet and decreased with a high-protein, low-starch diet. In 1927, Goldstein showed that the content of fat -digesting lipase, protein-digesting trypsin, and starch-digesting amylase in the pancreatic secretions of humans varied in direct relation to the amount of fats, protein, or complex carbohydrates in the diet. **The implication of this and the**

dog research is that by taking in foods high in live enzymes, less of our own digestive enzymes need to be used, so we are able to conserve enzyme energy. Enzyme energy is linked to our vital force and therefore the energy of our SOEFs. The higher our vital force, or SOEFs, the better our health.

## Enzyme Level and Chronological Age

The significance of **enzyme preservation** and the Law of Adaptive Secretion becomes even clearer when we see how much our enzyme level is linked to chronological age and disease. For example, Dr. Meyer and his associates at Chicago's Michael Reese Hospital found that the amylase in the saliva of young adults was thirty times greater than in people with a chronological age of 69. Dr. Eckardt in Germany found that young people had 25 units of amylase in their urine as compared to 14 in older people. Other researchers have found that the amount of SOD in an 80-year-old person is 57% of that of a newborn and 61% of that of a 10-year-old child. In a 40-year-old person, the SOD was found to be 84% of a newborn and 87% of a 10-year-old child. **Individuals 27 years of age have been found to have twice the amount of lipase as 77-year-old people.** A lower enzyme content is also found in people with chronic diseases. In 111 Japanese patients with tuberculosis, 82% had lower enzyme contents than normal. In 40 patients with liver diseases, all had lower levels of amylase. **In diabetics, it has been found that 86% are lower in amylase.** Researchers have also found a lowered lipase level in people with obesity, arteriosclerosis, and high blood pressure. Directly and indirectly, we can see how important enzyme preservation and harmonious utilization are to health and vitality.

This same sort of enzyme decrease with chronological age happens in the animal kingdom. Researchers have found the enzyme content of younger Daphnia insects, potato beetles, grasshoppers, fruit flies, fire flies, and rats to be significantly greater than for their older counterparts.

The above findings may be connected with the research of Dr. Kollath of the Karolinska Hospital in Stockholm, who found that when he put animals on a diet of cooked and processed foods similar to the regular Western diet, they initially appeared to be as healthy as animals on live foods. As the animals reached adulthood, those on the cooked and processed foods began to age more quickly. They also developed chronic degenerative disease processes at an earlier age. The animals' degenerative diseases resembled the very human diseases common in the Western industrialized world, such as osteoarthritis, osteoporosis, and constipation, et cetera. He called the state of health of these animals "**meso-health**," a sort of half-health. Those animals raised on raw foods did not suffer from these problems.

The good news was that the meso-health of these animals could be reversed. It couldn't be done with megadoses of vitamin or mineral supplementation, however. The only thing that worked to reverse the aging process and bring the animals back to a normal state of health was to give them raw foods. Dr. Kollath called these heart-sensitive, unknown factors in the raw food "auxones." Most likely what he termed auxones were enzymes. There are many other factors in raw foods that also support health, but the enzymes are probably the most significant.

Similar animal research was done over a ten-year period by Francis Pottenger, M.D., using 900 cats. He gave half of the cats raw milk and raw meat and the other half pasteurized milk and cooked meat. In the first generation, the cats on the cooked food developed a pattern of degenerative disease similar to what we see in humans. In the second and third generations of cooked-food-eating cats, he observed the onset of congenital bone deformities, hyperactivity, and sterility. The cats became so

dysfunctional that plants would not even grow on their manure. The conclusion he made was that some critical, heat-sensitive factor was missing from the cooked food. The main factors known to be completely destroyed by heat are enzymes. **The Pottenger Cat Study** is discussed in detail in Chapter 8, "Deficient Diet: A Cause of Physical and Mental Degeneration"

According to Dr. Howell, temperatures of 118° F applied for one-half hour will destroy all the food enzymes in a particular food. This is a temperature that is sensed as warm to the hand. One can see that any kind of cooking, boiling, baking, or frying destroys essentially 100% of the enzymes, as does canning, food irradiation, and microwave cooking. Dr. Howell points out that boiling food for three minutes will kill all the enzymes. His research shows that at 145° F, the temperature for pasteurization, 80-95% of the enzymes are destroyed after one-half hour.

## The Role of Food Enzymes in Digestion

TO DEVELOP AN OVERVIEW, we need to dissolve some false concepts about the process of digestion and understand how food enzymes work in our total organism. Contrary to the myth that our stomach is simply one big container for the digestion of protein, researchers have conclusively shown that there are two distinctly different digestive sections of the stomach. There is an upper part [**food enzyme stomach**] which retains food for 30-60 minutes while salivary digestion continues. There is no peristaltic action in this part of the stomach, and there are no enzymes secreted from its walls. The second part of the stomach is the lower part, called the **pyloric stomach**. This is where the hydrochloric acid and pepsin are secreted and considerably more protein digestion carried on. During the first 30-60 minutes in the upper stomach, digestion takes place primarily by the food enzymes released from the raw foods. The digestive process actually starts in the mouth, where the ptyalin in the saliva begins to digest the carbohydrates. In the process of chewing, the cell walls of the plant food are broken down and the food enzymes begin to get released. Most green foods are covered by a thin layer of cellulose for which humans have no digestive enzymes. For this reason, it is important to chew our food well [**fletcherize**], because when the cell walls of the plant are opened up by the action of chewing they release cellulase in the food itself, which helps to digest this cellulose. It is my impression that some of the green plants that are more difficult to digest in their raw form, such as broccoli, have a thicker layer of cellulose, and the problem is that we do not chew it well enough to break open the cell walls and release the plant cellulase.

Given this new perspective on the upper part of the stomach, which is anatomically known as the cardiac area, we will now call this the "**food enzyme stomach**" A food enzyme stomach is found in many animals. Cattle, sheep, whales, dolphins, and chickens all have them, although often called by different names, such as the rumen in cows and crop in chickens. Support for this idea of two distinct parts of the stomach is also found in one of the medical school anatomical classics, *Gray's Anatomy*, which terms the first part the upper, or cardiac portion. The lower, "pyloric stomach" has a pH of 1.6-2.4 The upper stomach has a pH that ranges from 5 to 6. This is important because the food enzymes are still active in this 5 to 6 pH range. They are temporarily inactivated in the 2.4 or lower range. A number of researchers show that the food enzymes again become active in the alkaline pH of the small intestine, where they complete their work.

Although this seems like a new concept, research by a variety of people shows that digestion does occur in the food enzyme stomach. Dr. Beazell reported in the *Journal of Laboratory and Clinical*

Medicine that 20% of starch was digested in the stomach, and only 3% of protein, in this first hour of digestion. Olaf Berglim, a professor of physiology at the Illinois College of Medicine, found that 45 minutes after giving his subjects mashed potatoes and bread, 76% of the starch in the mashed potatoes and 59% in the bread was digested. Other researchers have found similar results. This research was most likely done with cooked foods and so probably only the ptyalin (amylase) from the saliva was active in the food enzyme stomach. Dr. Howard Loomis, who is considered to be Dr. Howell's successor, estimates that *an average of 60% of starches, 30% of protein, and 10% of fat are digested in the food enzyme stomach.* We can only assume that considerably more would be digested if it were raw food because the raw food would have its own digestive enzymes that would be released. The point is, as with the rest of nature's animals, the food enzyme stomach is where all the food enzymes in the raw foods are engaged in active digestion, along with our own ptyalin and amylase secretions from our saliva.

The result of this digestion in the food enzyme stomach is that the pancreas is not forced to work so hard to secrete so many enzymes. This conserves the body's enzymes for use toward non-digestive, metabolic purposes such as detoxification, repair, and the health and proper functioning of the endocrine glands and other vital organs. Because eating raw foods liberates enzymes for use in other parts of the body, the importance of making a high percentage of our diet biogenic and bioactive is obvious.

Evidence compiled by Dr. Howell strongly suggests that eating foods devoid of enzymes as a result of cooking, food irradiation, and microwaving causes an enlargement of the pancreas and also stresses associated endocrine glands, such as the adrenals, pituitary, ovaries, and testes. In all of nature, the human pancreas is three times larger, as compared to total body weight, than that of any other animal. What is interesting is that when mice are fed cooked foods, the ratio of their pancreas weight to total body weight becomes approximately that of a human's. When they are switched back to a raw-food diet, their pancreas shrinks back to normal size. The most obvious conclusion is that the pancreas becomes hypertrophied, or enlarged, because it is forced to keep up a high digestive enzyme output.

A great deal of the body energy goes into the process of digestion. Sometimes so much energy is needed for digestion that we tend to become sleepy after a meal. This increased amount of energy implies that a large input of enzymes is used up in the digestive process. Some theorize that in order to keep this enzyme production up, the pancreas has to draw enzymes from other bodily glands. This forces these other glands to overwork and eventually enlarge to compensate for the demand. This hypertrophy primarily starts with the endocrine glands. Hypertrophy of a gland eventually leads to its early exhaustion.

## **Leucocytosis and Paul Kouchakoff**

Perhaps associated with the phenomenon of increased enzyme secretion by the pancreas due to cooked-food eating are the startling findings mentioned earlier of a Swiss physician, Paul Kouchakoff. In 1930, he showed that the eating of cooked foods caused leucocytosis, which is an increase in white blood cells. This even occurred when water was heated above 191 degrees F.

There are two hypotheses to explain this. One is that the white blood cells, which have a similar lipase, protease, and amylase ratio as the pancreas, are actually taking enzymes to the pancreas to boost its

supply. The second explanation is that when food is cooked and water boiled, the body recognizes it as foreign and has an immune response to it. Both explanations may be true simultaneously. In any case, the repeated leucocytosis with every meal certainly puts a strain on the immune system. Kouchakoff also found that when subjects started a meal with raw foods which equaled more than half of the meal, they were able to have some cooked foods and not produce a leucocytosis. When people ate biocidic, highly processed, or junk foods, not only did they get leucocytosis, but the normal white blood cell ratios became deranged to the extent that they resembled the pattern one sees with blood poisoning from contaminated meat. From the point of view of the SOEFs, one can see how eating biogenic and bioactive foods brings SOEF and enzyme energy into the system, and eating biostatic (cooked foods) or biocidic foods requires SOEF and enzyme energy to complete the digestion, and therefore depletes the SOEFs and enzyme reserves.

## Enzymes For Health

IN ORDER TO UNDERSTAND THE IMPORTANCE of enzymes for our health, it would be useful to understand how they specifically affect our health.

For example, a doctor at Tufts Medical School found that in 100% of the cases of obesity he studied, all had lipase deficiencies. The implication was that these people had a decreased ability to assimilate fat properly. The fat ended up being stored as fatty tissue rather than being broken down.

Cooked food seems to stimulate the craving for food because the organs are not getting the nutrients they would normally get in uncooked food. The body naturally craves more nutrients, which may translate into an uncontrollable appetite and lack of willpower. Farmers have long known that if you give raw potatoes to hogs they will not gain weight, but if you give them cooked potatoes they gain weight. In my clinical practice, I often see people lose weight readily when they go on a raw- food diet. Many times this is all that is needed to help people lose weight.

As pointed out in an earlier chapter, cooked fats are missing lipase and have significantly less biologically active cis fatty acids. The difference in the digestive pattern of the raw versus cooked fat may also be important. The raw fat begins its digestion with its own lipase in the food enzyme stomach under slightly acid conditions. The cooked fat, without its own lipase, doesn't begin a significant digestive transformation until it is in the highly alkaline pH of the small intestine. When they both reach the small intestine, the predigested raw fats or oils are already beginning the next step in the digestion, while the undigested cooked fats are just starting their digestion. This may result in a slight shift in how the fat is metabolized and could cause some altering of the cholesterol. This interference with the fat digestion sequence may be another reason a high cooked fat intake is so deleterious to our health. The other reason is that eating cooked fats or oils causes an eventual lipase deficiency in the system. For these reasons, a deficiency of lipase may have a profound metabolic effect on both obesity and cholesterol disorders. It will be interesting to see what the researchers discover in the next few years about this important health question.

## Enzyme Deficient Is a Hard Way to Start Life

BABIES WHO ARE NOT BREAST-FED are immediately forced to deal with a lipase and amylase deficiency in their food because they get almost no enzymes at all in pasteurized milk. In a study of

more than 20,000 babies, the rate of illness was compared between completely breast-fed babies and bottle-fed babies.

### **Pasteurized milk-fed babies had a mortality rate 56 times greater than breast milk-fed babies.**

The general rate of sickness was nearly double for the pasteurized milk-fed babies. Although there are other factors involved with breast-feeding that make it desirable for health, it is very important to realize that babies who are not fed with breast milk are being short-changed by enzyme-deficient foods. This is probably true for the majority of our children in America who have become addicted to enzymeless junk and fast foods. We are paying the price for altering the way Mother Nature presents us with her gifts. By cooking food we contribute to the loss of our health at an earlier age.

### **Raw Starch/Cooked Starch – George Washington University Study**

For diabetics and hypoglycemics, it seems that whether food is cooked or raw is very important for their well-being. In research at George Washington University Hospital, when 50 grams of raw starch was administered to patients, the blood sugar only rose 1 mg in one-half hour before it began to decrease. With the cooked starch there was a dramatic average increase of 56 mg in one-half hour and then a 51-mg average drop by one hour. This is quite a significant shift in blood glucose. The major difference between the raw and cooked is the raw starch came with its own amylase and so was able to be predigested in the food enzyme stomach. Raw food and low-fat diets, with the use of added food enzymes, have been found to be a very effective treatment of adult-onset diabetes. On such a diet, if properly managed by a physician, adult-onset diabetics can actually stop needing insulin injections or oral medications.

### **How Do We Preserve Our Enzymes?**

**EATING RAW FOODS IS THE NUMBER-ONE ACTIVITY which preserves enzymes and maximizes health.** It is the diet of choice of all the rest of Mother Nature's children that dwell on this planet. Animals that live in the wild do not suffer from chronic degenerative diseases as do humans and domesticated animals. It is a striking fact that all other species, without exception, eat their foods raw, whereas the overwhelming majority of humans do not. When animals are fed cooked foods, they too begin to suffer chronic degenerative diseases.

The foods with the highest amount of live enzymes are biogenic, predigested, and fermented foods. Seeds that have the highest enzyme content are those with a ¼ inch sprout. Some have estimated that the enzyme content is ten times greater at this 1¼ inch sprouting stage. In Asia, the idea of fermenting soybeans by exposing them to the enzymatic action of fungal plants has been practiced for thousands of years. The fungal plants not only add enzymes to the food, but predigest the protein, carbohydrates, and oils. Miso, a fermented soybean product, and tempeh, a soy product with a cultured fungus, are examples of this. One can also make enzyme-rich, fermented, raw seed and nut cheeses through a fermentation process (see recipes section).

Although all live foods are high in enzymes, there can be a tendency for some people on a live-food

diet to become too thin if they eat just vegetables, fruits, and sprouts. Through self-experimentation, I found that on a vegan diet of 99% live fruits, vegetables, seeds, and sprouts, with occasional sprouted or cooked grains, I am able to maintain my weight. By adding certain foods that not only are high in enzymes, but also high in carbohydrates or lipids, I am able to increase my weight at will. These foods primarily are bananas, avocados, and soaked or sprouted raw seeds and nuts. Other foods that are high in enzymes as well as calories are: grapes, mangos, dates, raw honey, raw butter, and unpasteurized milk. Though raw dairy products are high in enzymes, I do not necessarily endorse their consumption.

**Fasting** is another powerful way to conserve and redirect enzyme potential. During a fast, we stop producing digestive enzymes and the enzyme energy is diverted to the metabolic sphere of operations, which includes an increased rate of autolysis (breakdown of old cells), as well as a breakdown and elimination of fatty deposits, incomplete proteins, and other toxic material in the system. The enzymes become a rejuvenating power for us. Raw food expert and author of *Survival into the 21<sup>st</sup> Century*, Victoras Kulvinskas, suggests that during a fast, our natural body bacteria have an opportunity to add a great deal more of their enzymes to our system and thus increase our total enzyme force. My observation in guiding many individual fasts and running several spiritual fasting retreats per year is that fasting is an incredible way to rejuvenate our total life force and SOEFs. When we fast on water or juices, we are giving a substantial rest to our digestive enzyme systems, and this takes the burden off our enzyme pool.

## **Not Overeating: The Secret to Health, Longevity, and Enzyme Preservation**

NOT OVEREATING RAW FOODS is itself another way to conserve enzymes. It is different from an obsessive undereating, which can result in a physical and mental deprivation syndrome. *Not overeating is what I call the art of conscious eating. It is learning to take just the right amount of food and drink to support our individual needs on every level of our spiritual and worldly functioning.* Researchers have shown that not overeating increases longevity. World-famous nutritionist Paavo Airola, Ph.D., has proclaimed that undereating is the most important health and longevity secret. **He believed that overeating of even health foods was one of the main causes of ill health.**

Jesus, in *The Essene Gospel of Peace, Book One* (p. 31), said, *And when you eat, never eat unto fullness.*

Moses Maimonides (1135-1204), one of the most celebrated of all Jewish healers and spiritual teachers, taught in his Mishveh Torah:

Overeating is like a deadly poison to any constitution and is the principal cause of all disease.

**Animal research by Dr. Clive McKay of Cornell University showed that when food intake was halved, the life span of rats was doubled and they were healthier.** The rat's life span increased to the equivalent of approximately 170 human years. At Brown University, 158 animals were overfed and another group was put on a near-starvation diet. Those on the sparse diet lived 40% longer. For those who might be concerned that they have been irreversibly overeating to the detriment of their health, research by Roy Walford and Richard Weindruch showed that one could extend the life of even middle-aged animals by underfeeding them. Some of their mice lived 40% longer, and fish lived three

times longer, on a sparse diet. Researchers also noticed that degenerative diseases such as cancer and heart and kidney disease occurred less frequently, and the onset of these diseases occurred at a later age in the underfed mice. These researchers even discovered that the mice's immune systems were rejuvenated. For example, underfed mice had only 13% spontaneous cancer as compared to 50% for mice on the same type of foods, but with no limits on the food intake. Kidney disease was 25% in underfed mice versus 100% in the mice with an unlimited diet. There was 26% heart disease for the underfed mice versus 96% with heart disease for the overfed. Other animal research has now confirmed these findings. The underfed animals stayed physiologically younger for a longer time.

Animal research in both the US and Germany has also shown that rats fed once per day had higher enzyme concentrations in the pancreas and fat cells and a 17% increased life span over that of frequent eaters. It seems that if the enzymes are only secreted once per day, there will not be as many of them used up as with frequent meals. *The evidence of the effects of not overeating is that it is actually a method for life and vitality extension as well as prevention of degenerative disease.*

Research suggests that excessive eating causes oxidative stress to the system, which results in free radical damage to the tissues and an increase in cross-linking of the active protein in the tissues and cells so that they no longer function properly (a sign of aging). Free radicals are harmful molecules that can be generated by poor nutrition, emotional and/or physical stress, environmental pollution, surgery, radiation, food irradiation, bacterial and viral illnesses, and the aging process in general. These free radicals have a free electron that disrupts the integrity of cell membranes. They are quenched and neutralized by molecules called antioxidants.

Eating a dietary program that is low in protein and total calories helps the body fully assimilate what is eaten. This way of eating creates a minimum of metabolic by-products such as free radicals. Eating less food and increasing the quality of food is something everyone can do if they put their awareness on this aspect of a balanced life. Not only will this approach cut down on the rate of aging, but unlike most medical approaches, this way of living will actually save money by not having medical problems to begin with.

Not overeating results in optimal health and not malnutrition. *Not overeating in our society is eating what we need rather than what we desire or that to which we are addicted.* This is not so easy for most of us. We live in an environment of excessive stimulation from empty calories and negative thoughts. We are undernourished from the insufficient nutrients in all our processed foods, and we are overfed with junk in an effort to compensate for the lack of true nourishment.

Not overeating is a part of conscious eating. It means eating what is appropriate to our health, vitality, and longevity, and what will bring us into harmony with our body and the planetary body. This understanding of the importance of not overeating has inspired me to switch in my own life to two meals instead of three meals per day.

## **Historical and Cultural Evidence for the Benefits of Not Overeating**

CULTURAL EVIDENCE SUPPORTS THIS NOT-OVEREATING APPROACH. The cultures in which people live long and healthy lives, such as the **Indians of the Vilcabamban region of Ecuador**, the **Hunzakuts** of West Pakistan, the **Tarahumara Indians** of Mexico, and the **Abkhazians of Russia**, all consume a low-protein, high-natural-carbohydrate diet that has about one-half to one-third the calories and amount

of protein that the average American eats.

Historical cases of longevity have been associated with eating less. Saint Paul the Anchorite lived to be 113 on dates and water. Thomas Carn, born in London in 1588, lived to be 207 on two vegetarian meals per day. This health wisdom has been with us for thousands of years, but few really put it into practice. On a 5000-year-old Egyptian pyramid, an inscription of this wisdom was found: "Man lives on one quarter of what he eats, on the other three quarters, his doctor lives"

One of the most famous of the "non-overeaters" was **Luigi Cornaro**, a Venetian nobleman who lived from 1464 to 1566. By his late forties, he had become deathly sick from overeating. A doctor, Father Benedict, who had been trained in the Essene health philosophy, explained to him about eating less. Cornaro simplified his diet to 12 ounces of solid and 14 ounces of liquid food per day and recovered to live to be 102. He went on to teach many people about this Essene way of health, including the Pope. His writings on not overeating are summed up in two statements:

*The less I ate, the better I felt.*

*Not to satiate oneself with food is the science of health.*

From what we now know about the importance of enzyme preservation, not overeating, especially of raw foods, less frequent meals, no snacking between meals, and fasting are effective ways to conserve enzymes and thus build and maintain a high quality of vitality and healthy longevity. The idea of not overeating may be threatening in the US, where we have more than 80 million people who are considered overweight. We are a country of overabundance in which overeating has become a major way of avoiding unwanted feelings such as intimacy, sexual desire, loneliness, feeling unloved, and anger. It can also be a form of self-sabotage and self-abuse, as well as a slow form of suicide. Overeating food has become one of America's most serious addictions.

## Enzyme Supplementation

IN ADDITION TO EATING LIVE FOOD and not overeating, the use of **exogenous enzyme supplementation** is another way to build up enzyme reserve.

Since 1949, enough research has thoroughly documented that these enzymes are not only active in the digestive system but will increase in concentration in the blood after being taken orally. For example, researchers who fed raw soybean lipase to rabbits demonstrated that the blood serum lipase was elevated in response to the oral administration of lipase. Work by Peter Rothchild, M.D., Ph.D., found that in a double blind study using the antioxidant enzymes from a wheat sprout matrix, there was a 70-90% increase in blood levels of serum **glutathione peroxidase** after giving these oral wheat sprout concentrates. In another similar wheat sprout enzyme study, he found a 40% increase in SOD and a 60% increase in serum catalase. The fact that we can absorb these enzymes through our digestive tract is important because it means we have a way of correcting some enzyme deficiencies. Of course, it is a lot easier and less expensive if we do not create the deficiencies by not eating cooked foods in the first place.

Live plant digestive enzymes may be the best source of enzyme supplementation. They seem to be active at a much fuller pH range than animal enzymes. These plant enzymes show some activity in the stomach, especially the enzyme stomach, and become immediately active in the small intestine. One

study, reported in the *Journal of Clinical Nutrition*, found that 70% of plant amylase is active in the small intestine after being ingested orally. Because of these facts, I recommend that people consider using plant digestive enzymes for their digestive supplementation. They are actually concentrated food enzymes from nature. This is welcome news to those who feel they need digestive enzymes but who do not like to eat animal pancreas products taken from slaughterhouses.

Animal enzymes, such as pepsin, only work in a moderately strong acid environment such as the stomach. Trypsin only works in a slightly alkaline environment, such as in the small intestine where it is secreted. Because of the versatility of its activity, plant digestive enzyme supplementation can take the stress off the entire digestive enzyme system. Some pancreatic animal enzyme tablets have an enteric coating which protects them from inactivation in the stomach. These enzymes require the pancreas to secrete enough enzymes to digest their enteric coating before they start to operate. Thus, they do not give the pancreas a chance to conserve its digestive enzyme power for use in other places in the body like the plant enzymes do.

Another form of enzyme supplementation is produced by growing and harvesting wheat berries that are specifically cultured to be high in antioxidant enzymes. These antioxidant enzymes neutralize free radicals throughout the system at the cellular level. In addition to the medical use of these enzymes, we live in such a toxic environment that most everyone needs to maintain proper antioxidant enzyme levels as a critical protection barrier. Preliminary research has suggested that once optimal blood levels of these antioxidant enzymes are obtained, they do not go any higher by increasing the dosage. This suggests the possibility that some of these live enzymes might be converted to other types of metabolic enzymes in the system. Thus, the use of these enzymes affords an opportunity to protect against free radicals as well as to increase general enzyme reserves.

## Reasons to Use Enzymes

1. Anyone eating cooked, microwaved, or irradiated food should take food enzyme supplements to compensate for the lost and destroyed naturally occurring food enzymes that were previously in the food. This approach is still not the same as eating the food in its active, live state. Even if a person eats 90% live food, if they still have imbalances in their health, they would do well to take enzyme supplements.
2. Since age correlates with a decreasing enzyme reserve, enzyme supplementation should theoretically slow down the aging process by building up the enzymes and quenching free radicals. For this reason, I now recommend that everyone use enzyme supplementation, including those who are eating 100% live foods. These live food enzymes can be found in any health food store.
3. During acute and chronic illnesses, there is often an enzyme depletion that can be alleviated by enzyme supplementation. In my clinical observations as well as those of others, enzyme supplementation seems to increase the rate of recovery.
4. I have found that people with digestive disturbances, endocrine gland imbalances, blood sugar imbalances, diabetes, obesity, cholesterol excesses, stress-related problems, and arthritic inflammations all seem to benefit from enzyme supplementation. Dr. W.W.

Oelgoetz has shown that partially digested fats, protein, and carbohydrate molecules get into the blood system when the blood enzymes become too low. He observed that when he gives clients oral supplements of amylase, lipase, and proteases, the allergies which seem to be associated with these incompletely digested molecules subside. Thus, enzyme supplementation can be a support to the immune system.

5. Enzymes help the detoxification process because they free up more metabolic enzyme energy for this work.
6. Health-promoting use of proteolytic enzymes.

## Summary of the Importance of Enzymes

AT THIS POINT A SUMMARY ON THE IMPORTANCE OF ENZYMES would be helpful. Enzymes contain the power of the life force itself. Eating a live food diet helps to maintain the quality and quantity of our enzyme pool and therefore maintain our health and longevity. Enzymes are not simply catalysts that make digestion and all metabolic processes work; they are living proteins that direct the life force into our basic biochemical and metabolic processes. They even help repair our DNA and RNA. Enzymes help transform and store energy, make active hormones, participate in their own production cycle, dissolve fibrin and thus prevent clotting, and have anti-inflammatory effects, anti-edematous effects, and even analgesic effects. The research suggests they also balance and enhance the immune system; help to heal cancer, multiple sclerosis, rheumatoid diseases, and arthritis; minimize the effect of athletic injuries; decrease injury recovery time; and aid with digestion.

Many enzymes work within the cellular structures, such as in the cell nucleus with the DNA/RNA or mitochondria (the energy factories in the body). Some enzymes move freely within the body fluids, such as during digestion or in the serum of our blood. Many of the free enzymes, especially proteases, are bound to transport proteins in the serum. These binding proteins, alpha globulins, transport the enzymes and other molecules to various parts of the body to regulate all body processes.

## I divide enzymes into seven major biochemical classes

One class is **oxidoreductases**, needed for biological oxidation and such processes as the making of ATP and protection from free radicals. Some members of this class include dehydrogenases, oxidases, and oxygenases.

A second class is called **transferases**, which transfer chemical groups from one molecule to another.

A third class is called **hydrolases**. They cleave chemical bonds and add water in the process. They catalyze the breaking of ester bonds in fatty acids, split amino acid bonds in proteins, and cleave glycoside bonds. These include proteases, glycosidases, and esterases.

A fourth class is **isomerases**. These help to rearrange chemical groups within the same molecule.

A fifth class is **lyases**, which cleave double bonds between two atoms.

The sixth group is called **ligases**; they catalyze the formation of a bond between two molecules. These include DNA ligase, synthetases, and carboxylases.

The seventh class of enzymes is **digestive enzymes**. These include proteases, which digest proteins, amylases, which help digest carbohydrates, and lipases, which digest fats. They are made up of enzyme types from some of the other classes.

With age, under stress, or after illness, the amount of enzymes decreases in our bodies. Enzymes are critical for our health. As they diminish, our ability to perform the tasks which keep the body healthy also diminishes. Aging happens when enzymes decrease in concentration in the body. Some enzyme researchers and live-food teachers like Ann Wigmore believe that enzyme preservation is the secret to longevity.

One way to preserve the body's store of enzymes is to eat living or raw foods because foods in their natural state are loaded with digestive and other enzymes. Another way to enhance the enzyme pool is by adding natural digestive enzymes to support digestion and create even less of an enzyme drain on the system. One may also take proteolytic enzymes which break proteins down into free amino acids. These include protease enzymes, bromelain, and papain between meals on a regular basis, or certain mixtures of enzymes therapeutically. Over time, I have become more impressed with the effectiveness of adding enzymes to the system as a natural anti-aging, preventive measure and/or for therapeutic reasons. This includes digestive enzymes in general and proteolytic enzymes specifically.

## Origin of Enzyme Therapy

**THE ORIGIN OF ENZYME THERAPY can be traced back to the indigenous peoples of Central and South America, who used the leaves and fruit of papaya and pineapples therapeutically for thousands of years.** Enzymes were used in Africa and India. The Bible mentions the use of figs, which are high in enzymes, for healing. A specific example was the prophet Isaiah's use of figs and blessings to help heal King Hezekiah. The curative effect of many plants and fruits used in the Middle Ages was due to the proteases in them.

In 1900, the Scottish physician John Beard began to treat cancer patients with enzymes of plants and enzymes from the pancreases of freshly killed animals. Following him was Max Wolf, an Australian-born physician who is considered the father of systemic enzyme therapy. He, along with Helen Benitez, a cell biologist, was able to explore and develop proteolytic enzyme preparations for therapeutic uses, **especially for the treatment of cancer.**

Wolf also believed that premature aging, with all its secondary symptoms, is based on a deficiency of these enzymes. Wolf theorized that the key element of most aging processes is a disturbance in physiological and regulatory mechanisms of the body. He understood that enzymes are critical for the proper functioning of the body's regulatory mechanisms, including the immune system. In 1960, enzyme combinations were introduced **in Germany** to help with the body's regulatory and immune system. Building up the enzyme reserve for health and anti-aging effects is not a new concept. The

benefits of the live-food lifestyle are supported by this scientific research. I am not just talking about enzymes as a metaphor.

The main enzymes involved in these regulatory functions are called **proteases**. These enzymes cleave proteins and are technically called proteolytic hydrolyses. Wolf's work was initially done with selected animal and plant proteases. Today, enzyme combinations based solely on high concentrations of plant proteolytic enzymes are available. Each protease has its own general specialty because each works on different protein complexes. For example, **bromelain** from pineapple is better than papain from papaya and trypsin and chymotrypsin from animals for reducing swelling and edema. Bromelain is not as good as **papain** for breaking up antigen-antibody complexes, or for cell receptor modulation. Protease function in the body is controlled by sequences of connecting enzymes. For example, at least five enzymes are needed for blood to clot, and five other enzymes are needed to dissolve the clotted blood.

Enzymes are directed by carrier molecules that transport the enzymes to where they are needed in the body and regulate their activity. The two most common of these enzyme carriers are alpha-1 anti-trypsin and alpha2-macroglobulin (A-2M). These proteins' globulins are called anti-proteases because they temporarily bind these enzymes and keep them inactive. These protease and anti-protease complexes have their own particular functions.

**Enzymes taken orally have been shown to absorb directly through the GI tract.** Research over the past three decades around the world has definitively proven that specific enzymes administered orally are absorbed through the gastrointestinal system and have systemic effects throughout the human body. This understanding is widely accepted in Europe, Japan, and China, but unfortunately, most American physicians are not aware of this. Researchers have found that there are even special regions in the small intestine such as **Peyer's patches** where some of the largest enzymes are absorbed more rapidly than smaller enzyme molecules. Approximately 6% of papain and 38% of bromelain taken orally is found to be active in the blood and lymph. If they are to be effective, large amounts of protease enzymes need to be taken. At least 12% of the proteolytic enzymes are absorbed. They are best taken one hour before or two hours after meals with eight ounces of water. In 1992 in Germany more than 1.4 million prescriptions of enzyme combinations were made with no side effects reported, with the exception of rare allergic reactions. Some changes in bowel movement smell and consistency, nausea, or gas may occur until the proper enzyme intake level is found.

### **There are conditions and times when it is best *not* to take enzyme therapy:**

1. Before going into surgery, which might involve blood loss because of the anti-clotting power of enzymes.
2. People with congenital disturbances in blood coagulation, such as hemophilia or coagulatory disturbances secondary to liver or kidney disease.
3. People taking anti-coagulants or thrombocyte aggregation inhibitors such as acetylsalicylic acid.
4. During pregnancy.

## 5. People with allergies to proteins.

Enzymes seem to be effective in the prevention and treatment of cancer, auto-immune diseases, vascular diseases, inflammations, injuries, infections, stress, and rheumatic diseases. Research to show their effect against cancer existed as early as 1907. Research showing their effectiveness for inflammations, joint pain, and edemas started in the sixties.

## Enzymes Are Effective Immune System Modulators

THE CENTRAL UNDERSTANDING about why enzymes can help with so many imbalances is that they are immune modulators or biological response modifiers. They help control the regulatory mechanisms of the immune system. **They can stimulate the immune system if needed, regenerate the immune system, or even act to inhibit an overactive immune system such as what we see with auto-immune disease. In other words, enzymes act to normalize the immune system in a variety of ways.** For example, they help to regulate the anti-protease globulin system, which includes A-2M, involved in the regulation of the cytokine function of the immune system.

Proteolytic enzymes are able to stimulate the mononuclear phagocyte system (MPS) by bonding to A-2M globulins. When proteases are added to the system, the cells of the MPS are stimulated. The MPS cells protect the mucous membranes of the small intestine, vagina, the eyes, and skin, and as macrophages they can travel on their own through the tissues, engulfing and destroying foreign material.

According to research reported in *Enzymes: The Fountain of Life* by Lopez, Williams, and Miehke, proteolytic enzymes increase the activity of macrophages by up to 700% and natural killer (NK) cells by 1300% in cell culture within a few minutes. This activation effect has also been found in human experimentation. Proteolytic enzymes have been found to stimulate the peripheral blood mononuclear cells (PBMC), which include the precursors to macrophages, part of the scavenger process of the immune system. These enzymes also stimulate the PBMC cells to secrete cytokines, which help to enhance the immune system.

Proteolytic enzymes are important for the degradation of immune complexes as well. These immune complexes are often associated with inflammation and swelling in rheumatism. The vegetarian enzymes-lipases, papain, amylase, and proteases-and the animal enzymes-pancreatin and trypsin - all help protect the body from an overactive immune system. They also prevent worn-out cells from being treated as foreign cells, as in auto-immune disease settings.

On the surface of cells is a variety of receptor sites that affect intercellular communication. Various immunological reactions can be modulated by changing the receptors. An excess production of these cell receptors or an underproduction of surface receptors can unbalance immune system communication. Enzymes, depending on the need, can increase or decrease the amount of these cell surface receptors and thus balance the immune system. The cell surface molecules are important in cancer metastasis, because cancer cells make use of specific adhesion molecules or receptors to migrate into the surrounding tissues. Proteolytic enzymes inhibit the function of these adhesion molecules so the rate of metastases is inhibited. Research has shown that proteolytic enzymes inhibit the CD44 cell surface receptors that are found to be responsible for enhancing the metastasis of

cancer of the breast and large intestine. Proteolytic enzymes have also been shown to inhibit the adhesion molecule vitronectin that supports the metastasis of malignant melanomas.

Research has shown that when certain cells in the immune system are treated with enzymes, they make more cell messenger substances or cytokines, which play an important role in the regulation of immunological reactions. About twenty different cytokines have been identified so far. They include tumor necrosis factor (TNF), interleukins, monokines, and interferons. These cytokines are very important for the proper functioning of the immune system.

Because proteolytic enzymes are so critical in the regulation and normalization of the immune system, they are important not only for the prevention and treatment of cancer, but also auto-immune diseases, rheumatological problems, multiple sclerosis, skin diseases, and allergies. Enzymes are critical for the maintenance of all systems effective in defending the organism.

## Therapeutic Uses of Proteolytic Enzymes

ENZYME THERAPY HAS MANY OTHER HEALING EFFECTS in addition to its effect on the immune system. It improves blood circulation in a variety of ways. It makes the red blood cells more flexible and diminishes their tendency to clump. **Fibrinogen** increases with age, chronic disease, diabetes, and cancer. An increased fibrin in the blood decreases flow by making the blood more viscous, thereby increasing the potential of clotting. Enzymes decrease the fibrinogen in the blood and therefore improve blood flow. Enzymes also act like aspirin to decrease thrombocyte clumping and therefore the danger of blood clots, strokes, and heart attacks. They are much safer than aspirin, however.

Enzymes have anti-inflammatory effects and so decrease pain. With tissue injury there is a release of inflammation mediators which dilate the capillaries at the injury site. Plasma proteins travel into the tissues and carry water with them, causing swelling or edema. Fibrin formation is also activated, which further slows circulation. Proteolytic enzymes break down the fibrin, plasma proteins in the tissues, and the cellular debris, thereby decreasing swelling and pain and making it easier for the lymphatic system to carry away the debris. The other enzyme mechanism for decreasing pain is through degrading the inflammatory mediators, since active mediators such as the kinins and prostaglandins stimulate a pain response. In this way enzymes are analgesic.

**Enzymes have no side effects**, stimulate the immune system, and promote tissue regeneration, rather than slow the process like conventional anti-inflammatory medicines. One study of the use of enzymes in sport injuries done with ice hockey players in the German national hockey league by Dr. Sepp Worschauer, a team physician, showed that the prophylactic administration of enzymes helped to heal one-third to one-half more quickly and led to shorter absences from training. The typical symptoms of swelling and pains following usual sport bruises and sprains were minimized as compared to the normal post-injury responses without enzyme treatment. Athletes who used enzymes prophylactically definitely had less muscle soreness. The enzymes were effective if taken one hour before the athletic event.

Proteolytic enzymes minimize a variety of other inflammatory processes. A number of these inflammations even respond better to enzymes than to cortisone and other anti-inflammatory drugs.

Proteolytic enzymes have to be rated as excellent for inflammatory swelling and hematomas. They are good for healing inflammation of the respiratory tract, such as with constant bronchitis and acute constant sinusitis. They reduce the swelling of mucous membranes and dissolve micro thrombi and fibrin deposits in the membranes. Proteolytic enzymes help with inflammation of the ovaries and fallopian tubes from external infection or anti-immune causes and thus are good for pelvic inflammatory disease and endometriosis. They are excellent for the treatment of acute and **chronic prostatitis** as well as infection of the urinary tract. They are even effective in chronic pancreatitis.

Enzymes should not be taken 24 hours before an operation where there could be blood loss, but taken 36-48 hours later they help to speed recovery and decrease swelling and hematomas post-operatively. Perhaps most important is their ability to keep post-operative blood clots from forming or to dissolve them if they have formed.

In dental surgery, enzyme therapy has been quite successful. Proteolytic enzyme treatment should begin 48 hours before and continue until the seventh day post-operatively. One study showed that people were able to eat comfortably within two to three days after a wisdom tooth was pulled as compared to the usual ten or twelve days. In all the studies, there was no excess bleeding during the tooth extraction when the enzyme therapy was begun 48 hours before the operation. They also help protect against infection.

**Enzymes are very important in the prevention of blood clots and almost all vascular disease. In a society where over one-half the population dies from atherosclerosis and approximately 50% of the population over age fifty has varicose veins, enzymes used prophylactically make good sense.**

With age, the plasmin-producing cells in the walls of the arteries that prevent clotting decrease in number. Because of this there is a general tendency for the clotting mechanism to produce more fibrin, a substance that makes the blood more sticky and thus more likely to clot. Clotting is increased by arteriosclerotic changes in the artery wall, increased blood viscosity, decreased blood flow, and increased tendency to make fibrin. Damage to the artery wall is one of the primary causes of arterial clots. Venous thrombosis is more likely to happen from increased viscosity and decreased blood flow and/or hypercoagulability. In arteries, enzyme therapy reduces the tendency to form clots and improves all limitations to circulation. Proteolytic enzymes make the red blood cells more elastic, help keep red blood cells and platelets from sticking together, degrade micro thrombi that may stick to the artery wall, and have an anti-inflammatory effect on blood vessel walls. Enzymes are far safer and have a greater range of effects than aspirin.

Enzymes have been used to prevent existing vascular disease from progressing. They also help to neutralize the auto-immune aspects of arteriosclerosis by dissolving the auto-antibodies and immune complexes that form against blood lipids that lodge in the artery wall and cause inflammation and atherosclerotic plaque. Enzyme intake on a regular basis prevents an immune reaction inflammation that can damage the blood vessel wall, compared to aspirin that only works to prevent platelet aggregation.

In addition, enzyme therapy seems to increase the healthy high-density lipids and decrease cholesterol and triglyceride levels. For constant venous circulation problems like thrombophlebitis and varicose veins, enzyme treatment improves blood flow, reduces swelling, degrades micro clots, and inhibits inflammation, muscle pain, and cramping pain in as short a time as four weeks. Deep vein

thromboses in their acute stage are more safely treated in a medical clinic with bed rest. Sometimes the enzymes urokinase and streptokinase can be injected to dissolve the clot in the acute phase. Oral enzyme therapy by itself is most effective after the acute stage passes. Enzyme therapy also was found to inhibit post-thrombotic syndrome (PTS) pain, swelling, and scarring. In one study of 445 patients done by Dr. Otto Kar Ritansky of Vienna, Austria, in which he used enzymes and ozone therapy, excellent results were achieved for decreasing pain, healing tissue, improving walking distance, and preventing amputation.

## Lymphatic System

Proteolytic enzymes were also found to be helpful in clearing the lymphatic system. One dental study found that post-operative lymph node swelling was significantly reduced in cancer cases. The prophylactic long-term use of enzyme therapy post-operatively was helpful in minimizing constant lymphatic edema following breast cancer surgery.

## Viral Infections

**Proteolytic enzymes seem to be significantly helpful in the treatment of viral infections.**

**Cytomegalovirus, Epstein-Barr, hepatitis, herpes simplex, and acute herpes zoster infections** are all diminished with proteolytic enzymes.

One of the main reasons proteolytic enzyme therapy is effective is that it stimulates the development of T lymphocytes and macrophages. These two parts of the immune system have specific anti-viral effects. Enzymes also activate NK cells, which destroy the virally infected cells. The proteolytic enzymes help to regulate virally disturbed interrelationships in the immune system. The overall result is that they can even slow down the time between viral invasion and the outbreak of disease.

Research in 1964 by Dr. Dorrer, a senior physician in Prien am Chiemsee, Germany, found that the use of enzymes reduced herpes zoster pain within three days, and the herpes zoster vesicles became encrusted sooner than normal. Post-herpetic neuralgia did not develop in any patients using enzymes. The clinical results with enzyme therapy are equal to those with Acyclovir in the treatment of herpes zoster.

## Rheumatoid Diseases

**In rheumatoid disease, proteolytic enzymes can decrease inflammation, and mobilize, cleanse, and degrade immune complexes created by the immune response process.** In one large study reported in *Enzymes: The Fountain of Life*, depending on the type of rheumatoid disorder, 76-96% of the patients were classified as improved or considerably improved. The condition did not progress in 10%, and 2% experienced a deterioration of their condition. Proteolytic enzyme therapy has been used to alleviate such rheumatoid symptoms as morning stiffness, joint swelling, loss of grip strength, and loss of joint flexibility. In one double blind study by Dr. Klieg of Austria, the course of chronic polyarthritis could be stabilized with enzyme therapy.

Enzymes decrease and minimize the immune-mediated inflammation of joints, while strengthening the immune system rather than weakening it like cortisone. Enzymes have been shown to degrade the inflammatory-causing immune complexes deposited in the joints and even remove them while they are moving in the bloodstream of rheumatoid patients. Another way the proteolytic enzymes work is to dissolve the fibrin mantle which forms around the deposited immune complexes in the joints. This allows these immune complexes to be actively degraded by the immune system as well as the proteolytic enzymes.

As compared to gold treatments, which run about 20% effective over the long term, enzymes have about 1% side effects versus 20-30% for gold. The one drawback to enzyme therapy is that it may take weeks or months to be effective. But once effective it remains so, and enzyme therapy rarely has to be discontinued because of side effects. This is contrary to the case with other rheumatoid treatments, which often have cumulative side effects over time and have to be discontinued. There is a variety of arthritic conditions including arthritis from psoriasis that proteolytic enzymes can help to ameliorate. Enzymes also help in osteoarthritis because of their anti-inflammatory effect, immune-moderating effect, and the general improvement of circulation.

## Auto-Immune Diseases

In auto-immune diseases of the nervous system, enzymes break down the immune complement reaction with its destruction of the myelin sheath. By decreasing all levels of inflammation, enzymes protect the myelin sheath and hence slow or neutralize the progression of diseases such as **multiple sclerosis (MS)**. Non-spastic symptoms of his MS patients, according to Dr. Wolf, were decreased 50% with enzyme therapy, and the improvement was maintained over many years. Dr. Ulf Baumhackl, chief doctor at the neurological department at the hospital in St. Polten, Austria, and a full professor named Kretschowa in the department of neurology at the University of Prague both found that two years of enzyme therapy gave better results than the use of cortisone. In another European study, 80% of patients with episodic progression of MS benefited from enzyme therapy.

## Cancer Treatment

**Proteolytic enzymes** have been proven to play a significant role in the treatment of cancer in several ways. One is to strengthen the immune system to better cope with the cancer. Another way is to dissolve the fibrin cloak which often forms around tumor cells. The fibrin covers the cell surface landmarks of the cancer cells that attract the immune cell response. When the proteolytic enzymes dissolve the fibrin cloak, the immune system is better able to recognize the cancer cells and then destroy them. The proteolytic enzymes also stimulate the anti-cancer macrophages and natural killer cells, so that their anti-tumor capacities increase twelve-fold. Proteolytic enzymes help the tumor necrosis factor (TNF) molecules do their job of destroying tumor cells. They do this by keeping the TNF molecules from clumping together in large masses and blocking their own action. Another way the enzymes work is to inhibit the cancer cells' adhesiveness, which is important for their ability to create metastasis.

The adhesiveness of the blood and of cells is increased during chronic diseases and cancer so there is a concomitant decrease in blood flow, especially with age. Proteolytic enzymes increase the blood flow by dissolving excess fibrin and decrease the activity of the adhesion molecules of the cancer cells so it

is harder for them to form metastasis. In studying malignant melanoma, Dr. Lucia Desser of the Institute for Tumor Research and Tumor Development at the University of Vienna found that proteolytic enzymes inhibited metastasis formation of the melanoma cells. Dr. Rudolf Kunze of Berlin showed that by blocking the formation of vitronectin, an adhesion molecule on the surface of the melanoma cells, proteolytic enzymes inhibited the adhesion molecule receptor CD44 on **colon and breast cancer cells**, and thus blocked the metastasis of disease. In general, it seems that proteolytic enzymes act as a prophylaxis to metastasis and are helpful in maintaining cancer recovery.

Proteolytic enzymes plus vitamin E seem to help with **breast fibrosis** and many cases of early **breast cancer**. Professor Dittmar of a teaching hospital in Starnberg, Germany, showed in a study of 96 women with breast pain, swelling, and tenderness from nodular and cystic changes in the breast tissue that enzyme therapy significantly improved symptoms. Dr. Wolfgang Scheef of the Robert-Janker Clinic in Bonn, Germany, found that 85% of his patients with benign breast fibromas had no symptoms after six weeks of enzyme therapy.

## Enzymes and Our Immune System

Enzymes support many aspects of our immune system. They help build immune activation and immunoregulation. Proteolytic enzymes strengthen and potentiate many aspects of the immune system and therefore may help with the healing of the immune and auto-immune diseases. They also serve to protect us from heart attacks, stroke, blood clots, varicose veins, injuries, inflammation, rheumatoid and other forms of arthritis, a range of infective diseases, especially viruses, and from cancer. There are even enzymes which constantly repair mutations in the DNA and RNA. Enzymes optimize and enhance many levels of functioning of the immune system and so counter the potential negative effects of aging on the immune system.

The importance of a high level of enzymes for maintenance of quality of life and rejuvenation is significant.

**Three of the main symptoms of aging—a decrease in the function and efficiency of the immune system, a slowing of blood flow because of increased fibrin production, and cross-linking of proteins in our connective tissue—are directly improved by maintaining a high enzyme level in our tissues.**

**Proteolytic enzymes** [SEE VITALZYM OR SERRAPEPTASE] fill in for the declining plasmin-producing cells to dissolve fibrin and minimize any clotting phenomena and the progression of atherosclerosis. According to European research, proteolytic enzymes both break down and inhibit the formation of cross-linked protein chains and thus help maintain the elasticity of the tissues, including the arteries and veins.

We can postulate that *the higher we keep our enzyme reserve, the better all aspects of our biological functioning will be, and thus we will minimize the biological aging process.* Eating living and raw foods is one of the best ways to enhance our body's enzyme reserve, thereby minimizing the physiological aging process and maximizing the rejuvenation process. The use of proteolytic enzymes prophylactically and therapeutically is a powerful addition to the live-food lifestyle.

## Food Enzymes: A New Perspective on the Theory of Food Combining

THE GENERALLY HELD THEORY OF FOOD COMBINING in some sectors of the vegetarian community is that certain combinations of foods will disrupt digestion and cause putrefaction, fermentation, toxic acids, and heartburn. The combining at the same time of certain foods is said to disrupt digestion - for example, fruits and vegetables; fruits and starches; fruits and protein; starches and proteins; simple sugars, complex carbohydrates, and proteins; fats and protein; acid fruits and proteins; acid fruits and starches; two different types of concentrated starches; two different types of concentrated proteins; and dairy or melons with any other food. These poor combinations are said to take longer to digest and use up a great deal of enzyme energy. Many find these "rules" to be obsessively overwhelming.

The idea of food combining is not new; it is historically recorded in Exodus 16:8, which says, "And Moses said. . . the Lord shall give you in the evening flesh to eat, and in the morning bread to the full." This can be interpreted to mean that we should not combine starches and proteins. Another Kosher food-combining law from the Torah is not to combine flesh and dairy at the same meal.

The general theoretical principle behind food combining is that the different food classes require different enzyme secretions and digestive pHs for their assimilation. They also have different rates of digestion. For example, food-combining advocates claim that fruit digestion requires an alkaline solution that neutralizes the acid medium needed for the protein digestion and, therefore, fruit and proteins are a bad combination. Also, fruit has a faster digestive rate than protein, and if the fruits are held up for the slower protein digestion, they will begin to ferment. This is also why fruits and starches should not be combined. Fruits and vegetables are said to be incompatible because the enzymes required for their digestion neutralize each other and block digestion.

### THE LIVE FOODS PERSPECTIVE ON FOOD-COMBINING

From a live-food perspective, there are some major incongruities in the orthodox food-combining approach that need to be considered.

**The first** is the scientific evidence that live foods bring with them their own active digestive enzymes which digest a considerable amount of the food in the enzyme, or upper, stomach. Therefore, the concept of different bodily enzyme secretions for the different foods canceling each other is much less an issue, especially in the food enzyme stomach where no enzymes other than saliva and those released by the living foods themselves are activated. It is a proven scientific fact that each raw food comes complete with its own set of specifically combined enzymes to digest that specific food. For example, seeds are made up of primarily oils and protein, so Mother Nature has packaged in the seeds sufficient amounts of lipase for the oils and proteases for the protein. In seeds there is not much amylase present because they do not contain much starch.

**Another scientific fact** that needs to be considered is that **there are two distinctly different digestive stomachs**, as discussed earlier in this chapter. There is the **pyloric-or primarily protein-digesting-stomach**, and the **food enzyme stomach**, in which all the raw-food starches, proteins, sugars, and lipids are self-digested. We do not have just one stomach in which competing enzymes are poured as if into a bag, canceling each other out. In the food enzyme stomach, the pH is between 5

and 6, which is a range in which all of the plant food enzymes for all the different classes of food are active. No enzyme of any class of food is neutralized by any other food enzymes in the food enzyme stomach.

**A third point** involves a set of foods called the **predigested foods**. This predigestion process happens primarily by soaking or sprouting the seeds, nuts, and grains. In this process, the enzyme inhibitors, phytates, and oxalates are deactivated and almost entirely washed away after 6-24 hours of soaking. During soaking, complex carbohydrates are broken down to simple sugars, oils are broken down into free fatty acids, and proteins are broken down into free amino acids. In these predigested forms, these foods are much easier to assimilate. Some examples of these highly assimilable predigested foods are: raw, soaked, and sprouted seeds, nuts, grains, and legumes; bee pollen; raw nut and seed ferments; nut and seed cheeses and yogurts; and other fermented products, such as sauerkraut, tempeh, and miso. Most of these foods, except the tempeh and miso, which are cooked, can be digested easily with all classes of foods, including fruits.

The ability to comfortably combine predigested protein and fruits is particularly important for people with hypoglycemia. I have found that a great many of my patients who have hypoglycemia become unbalanced by eating just fruit in the morning. By adding the predigested seeds and nuts either directly to the fruit, or blending them into seed sauces, hypoglycemics have stabilized well and improved with this approach. I have also had good results using these predigested proteins for people with digestive disorders or other forms of malnutrition.

**The fourth consideration** is that food enzymes are not destroyed in the very acid, protein-digestive part of the stomach. They again resume active digestive capacities in the more alkaline-digestive part of the small intestine. They are also not neutralized by either the acid secretions or the alkaline pancreatic secretions of the small intestine, and so they keep their digestive powers to some extent throughout the full digestive process.

I do not intend to negate the orthodox theory of food combining. It is, however, put into a less urgent perspective if one eats primarily live or predigested foods. By presenting this more liberal view, I will be very happy if just one less person doesn't become obsessive about food combining; or if one less person stops breaking down in frustration and being alienated from Mother Nature and his or her own intuition because of intellectual fear of combining the wrong foods. I will be happy if one more person is not psychologically and gastronomically blocked by all the food-combining concepts. Human beings are extremely capable of creating what they believe and expect is supposed to happen. The more we can put orthodox food combining theory into perspective, the easier it will be to establish our own harmony with the gifts that Mother Nature offers us.

## Honor Your Food-Combining Needs

THE SIMPLEST RULE OF FOOD COMBINING is to eat a food, or combinations of foods, that in our direct experience are easiest for us to digest and thereby maintain our life energy and enzyme reserve. **If we are eating a primarily live- and predigested-food diet, the food-combining rules are considerably less applicable.** If we have a mono diet, but eat too much of that one food, we will still have digestive difficulties because overeating of any food, no matter how well-combined or raw, is still a stress on the digestive system. Overeating is a primary cause of digestive difficulties.

When I was in India in the 1970s, I lived on very little food. Often in the morning, about four hours after getting up, I would have raw tahini mixed with banana on a chapati (a piece of flat bread). Theoretically, this was the worst of three combinations: fruit, protein, and starch. I never had digestive difficulties from this simple meal because I ate so little of it and so little food altogether. **If, however, we eat when we are emotionally upset or rushed, we will tend to cause digestive difficulties.** Some people, especially pittas, have very strong digestive constitutions and so are less affected by their food combinations. Others have delicate digestive constitutions and need to pay more attention to their harmony with nature. It behooves us to become our own scientists and experiment to discover what are the best food combinations for us. The food-combining ideas can serve as a rough guideline for this.

Now that we have taken a new look at orthodox food-combining rules, we can appropriately consider some ideas of food combining. Whether or not the food-combining rules are based on accurate explanations for why people have digestive troubles when eating certain combinations, there are some combinations of foods, particularly if cooked, that are more likely to create fermentation or putrefaction than others: milk and meat, protein and starches, fruit and vegetables, and melons with any other foods. Eating too many different types of foods, even of the same food class, can also result in disrupted digestion.

Papaya and lemons seem to go well with any type of food. Avocados can also go with fruits or vegetables. A few easy-to-digest combinations are predigested proteins with vegetables or sweet and subacid fruits, sprouted grains with vegetables, or protein with vegetables.

The timing of eating plays a role in digestion too. A little water at meals if one is thirsty is acceptable, but drinking many glasses of liquid at a meal dilutes the digestive enzymes and therefore tends to impair digestion. A good time to drink liquids is twenty or more minutes before meals. If one must have dessert, it is a good idea to eat a fruit dessert one or two hours after a nonfruit dinner. Paavo Airola used to teach that if one is eating a salad and a protein, it is better to eat the salad either with the protein or afterwards. The roughage of the salad may tend to block the hydrochloric acid secretion from reaching the protein if it is eaten beforehand.

The best way to tell if our food combinations and volume of food intake are good for us is through the results. If we get gas, constipation, bloating, nausea, or exhaustion after eating, these are distinct signs that our combinations can be improved and the quantity of food decreased.

In a quote from the Essene Jesus in *The Essene Gospel of Peace, Book One* (p. 38), the concepts for proper food combining are nicely described:

*Take heed, therefore, and defile not with all kinds of abominations the temple of your bodies. Be content with two or three sorts of food, which you will always find upon the table of our Earthly Mother. And desire not to devour all things which you see round about you. For I tell you truly, if you mix together all sorts of food in your body, then the peace of your body will cease, and endless war will rage in you.*

It is more difficult to enjoy the flow of the cosmic energies and the peace of meditation when gas warfare is raging inside the bowels. **In the US, Tagamet, a drug for digestive disorders, is among the number-one-selling drugs.** This suggests that people have not yet begun to pay attention to

what, how much, and how they are eating. Part of the reason is that the traditional, "home economics, basic-four-food-groups-at-each-meal" concept is still being taught in our schools. It is hard to overcome old food thought forms, no matter how unscientific they may be. In general, however, if we eat live food with some degree of awareness of food combining, eating the appropriate combinations will no longer be a big issue and we will not need Tagamet for dessert. The more we become attuned to the laws of nature, the simpler our meals become, with fewer combinations at each meal. Please trust in your own experience and use some artful intelligence.

1. Shop for organic life in your foods.
2. Smell and touch foods to feel aliveness.
3. As you eat these foods, the memory of soggy, frozen, overcooked, cheesy, goopy vegetables will fade.