

Enzyme Nutrition Therapy

Eating enzyme-rich raw foods and supplementing the diet with plant enzymes is our best insurance in preventing and treating disease and promoting health and longevity.

Part 3 of 3

Extracted from Nexus Magazine, [Volume 11, Number 2](#) (February-March 2004)
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From our web page at: <http://www.nexusmagazine.com/>

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ENZYMES AS THERAPEUTIC TOOLS IN HEALING

Since ancient times, enzymes have unknowingly been involved in treating human ailments. Food consists of protein, carbohydrates, enzymes, fat and fibre, minerals and vitamins. While the properties of enzymes have largely been unknown until recently, results were witnessed and associations of health or disease were made between various plant and animal substances. The healing properties of herbs are primarily attributed to alkaloid or other chemical properties that trigger a response in the body. Invariably, the chemistry of herbs affects metabolic enzyme pathways. The unique substance either inhibits an enzyme or stimulates another to change body chemistry. Some plants have unique essential oils capable of inhibiting or destroying pathogenic micro-organisms due to the disruption of some enzymatic pathway of the organism.

Observations of the few (medicine men, shamans and later monks) gave them a certain power over the rest of the population who could not identify which plants caused the healing. This was reserved only for the tribal healer and passed on to the favourites within the tribe. The use of hallucinogenic plants was often employed by shamans to elicit the wisdom from the spirit world to aid in the cure of the person. In today's world of organised medicine, control over one's health is still largely in the hands of the elite few and knowledge is kept from the populace. Contrary to the enlightening herbs of the shaman, a moderate number of health care workers become addicted to or self-medicate with pharmaceutical drugs or turn to alcohol to help relieve stress involved in their profession.^{1, 2, 3}

Within the realm of natural medicine, old and new alike, therapies abound. Everything from acupuncture, botanicals and nutrition to homoeopathy and, more recently, "energy medicine" is available to the average patient. Regardless of the modality chosen, what remains to be understood is that in every case *the healing can only occur if the body has enough metabolic enzymes to do the work*. Enzymes do work. Work in this case denotes the ability to initiate, alter, speed up or slow down biochemical processes. It indicates having the capacity to break apart or join components together synergistically to change their original structure and function. Food is broken down during digestion and made into smaller components which are then utilised in the body for structure and function. Protein is rendered into amino acids and smaller peptides. These can be used as neurotransmitters for proper brain function. Certain amino acids are used for energy, mineral transport and repair of tissue.

Nutrition, as defined by *Webster's Third International Dictionary of the English Language*, is "The science of food and the processes by which the organism ingests, digests, absorbs, transports, utilizes and excretes food substances". All too often, this definition is forgotten in the field of nutrition. Nutrition today is practised in much the same way as the pharmaceutical drug approach: for every symptom, there must be a deficiency; simply give the mineral or vitamin and the signs will go away. One of the most common assumptions in both allopathic and complementary medicine is that the patient's digestive system is working fine. Unless the patient complains of heartburn, gas, bloating, belching or pain in the abdomen, doctors assume no problems. Divergent to this is the approach Dr Loomis took in his research into enzymes.

Diet, Digestion and Detoxification

When Dr Loomis began his exploration into the benefits of enzymes in restoring health, he knew the starting point had to be with diet and digestion. The dramatic increase in obesity, cardiovascular disease and diabetes in Western societies is evidence of the simple fact that people eat too much. It also reveals signs of chronic enzyme deficiencies. The combination of simple carbohydrates, fats and sugars found in "fast food" are the major contributing factors to the above disease conditions. Food is much more than just a quick fix for energy. Food is responsible for tissue repair and growth, hormone production, eyesight and immune function. Through protein neurotransmitters, food, or the lack of it, affects our feelings, thoughts and behaviour. In her groundbreaking book, *Molecules of Emotion*, Dr Candace Pert recounts her discoveries of several biochemicals involved with emotions.⁴ The body requires "raw material" from which to produce these biochemicals. Food is the raw material in the form of protein, fats and carbohydrates.

We must appreciate the dynamics of our body's internal environment—the intracellular and extracellular fluid—in order to understand other complications as the result of poor digestion. Intracellular fluid is found inside the cell and is not constant; it changes due to the extracellular fluid—the fluid outside the cell. Intracellular fluid represents about 66% of the water found in the body. Extracellular fluid roughly makes up the other 33% of the body's water. It serves as a means of transport for nutrients and waste products from normal metabolism. The extracellular fluid needs to remain reasonably stable regarding volume (amount of water), temperature, acid-alkali balance (pH) and levels of nutrients (protein, cholesterol, minerals, glucose) to nourish the cells. The body continually identifies deficiencies and excesses of specific nutrients or metabolic waste products. All attempts are made to rectify any imbalance by changing the chemistry. The hypothalamus is the only part of the brain not isolated by the blood-brain barrier. This barrier shields fragile tissues of the brain from changes in the body's extracellular fluid. It monitors the body's chemistry 24 hours a day, seven days a week. It reads the slightest alteration in the blood, then quickly sets about to make the necessary changes to maintain homeostasis (balance). The chemistry of the blood is largely determined by what we consume. Food and drink comprise varying combinations of proteins, fats, carbohydrates and fibres, enzymes, vitamins and minerals. It is all about chemistry. The hypothalamus must ascertain how to keep the body in balance despite the type of food consumed. The sort of balance necessary for optimal health for one person may not be the same for another. Indeed, most often they can be radically different. As Shakespeare wrote, "One man's meat is another's poison".

If you cannot completely digest what you eat, several things may happen.

- Firstly, the undigested food remnants pass through the brush-border of the intestinal tract into the blood and lymphatic systems. White blood cells are stimulated to find the offending material and finish breaking it down. This is known as digestive leukocytosis. It is an automatic response every time you eat cooked/processed food. It was thought to be a "normal" reaction to eating, ever since the early 1800s. However, it was shown to be an unnatural response in the 1930s by Dr Paul Kautchakoff.⁵ He proved by careful monitoring of patients' blood that only cooked—not raw—foods caused the reaction.
- Secondly, the body may begin to consume more than is necessary. Overeating is one way of

compensating for deficiencies of nutrients. The deficiencies are not due to the conscious restriction of a particular food. As stated previously by Dr Howell, *cooking food destroys all enzymes*, thus food will not be entirely broken down into the micronutrients necessary for cellular utilisation. It is like taking something the size of your house down to the size of a grain of sand in order to get inside the cell to nourish it. Enzymes are the only material capable of splitting food into usable nutrients. Given that undigested food cannot adequately nourish cells, the brain will direct the person to eat more of something to make up for what the body did not get from partial digestion. When this happens over long periods, weight gain occurs with continued loss of metabolic enzymes.

Food cravings are another sign of incomplete digestion. What we crave tends to be the food we do not digest very well. The hypothalamus dictates what we eat based on the chemistry of the blood. So when we eat a particular food and have cravings for it later, it is a sign we did not digest it very well. We will continue to eat more of it because there is something in that food we need but did not get. It has been suggested we are craving the enzymes inherent in that food before it was heated. Those enzymes we are chronically missing normally would be found in the food we crave. Dr Howell noted that animals fed cooked/processed food often resorted to eating their own faeces. He found it was to replace the food enzymes lost in the cooking process.

The enzyme amylase is a good example of the above. Amylase is one of the major carbohydrate-digesting enzymes. It is found in the kernels of grains and in starchy vegetables. By cooking those foods, amylase is destroyed and our body must secrete amylase from other organs, such as the salivary glands. Amylase is known as an IgG histamine blocker. It stabilises the mast cells and basophils that release histamine at the start of inflammatory conditions. One could say amylase is the body's own natural antihistamine. Antihistamines are prescribed for allergies, dermatitis and other histamine-type reactions. It has been observed clinically that people who eat excessive amounts of simple carbohydrates most often are those with histamine-related health problems—airborne allergen reactions, allergic reactions to insect bites and bee stings, sinusitis and other eye-, ear- and nose-related health issues. Sinus or frontal headaches are frequently associated with chronic amylase deficiency.

In Western society, patients with fibromyalgia tend to have a history of excessive intake of refined carbohydrates. Aside from the occasional discussion, there is little distinction made in the general media between simple and complex carbohydrates. People choose what is convenient. The fast food industry is based on this notion of convenience. However, when closely examined, most of what is considered convenient has detrimental effects on our health. The excessive consumption of carbohydrates will cause chronic depletion of amylase. This may result in the typical histamine conditions and pain found in fibromyalgia.

It is also thought fibromyalgia is related to excessive waste in the body. Undigested remains of disproportionate carbohydrate consumption can accumulate in tissue, since the body cannot eliminate it properly. This might partially explain the patient response to palpation at several lymphatic trigger points when being diagnosed. The lymph system removes waste from the body. Yet, this will not occur very well when too much food is eaten, causing a virtual backing up of the "plumbing". Using highly concentrated enzymes with patients who have histamine reactions alleviates the response within a very short time and without the side effects associated with conventional antihistamines.

- Thirdly, undigested food allows parasites and other pathogenic micro-organisms to live off the waste inside the body. Incomplete digestion allows bacteria to ferment carbohydrates and putrefy protein, giving off gas. The bloating that occurs after meals is the result of this. It is trapped gas, unable to move through the colon. The accumulation of undigested food in the intestinal tract leads to intestinal toxæmia. It is also known as indicanuria and is responsible for a number of health-related problems.

Eliminating Nutritional Stress

In the field of enzyme nutrition therapy, it is not just a matter of supplementing with concentrated

enzymes. It is equally important to make the necessary dietary modifications limiting the intake of those foods known to be dietary stress factors for each individual patient. This is determined through a 24-hour urinalysis and Digestive Challenge Test© as developed by Dr Loomis. It is believed that the only real disease is stress. It is how the body reacts to stress that determines what signs and symptoms of disease manifest in the body. Within Dr Loomis's system, we work with the following:

- Modifying diet to reduce dietary stress factors;
- Greatly improving digestion through intake of plant-based enzymes;
- Improving bowel elimination by nutritionally supporting those organs involved;
- Stopping or reducing inflammation;
- Improving immune function with concentrated enzymes;
- Supporting the autonomic nervous system with acidic/alkaline minerals;
- Nutritionally supporting the endocrine system for proper hormonal production.

There is a type of domino effect involved here. By improving dietary intake, you eliminate nutritional stress. Using plant-based enzymes with meals, the nutrients from food will be better digested, transported and utilised and waste will be more easily eliminated. When food is more completely digested, the body gets the nutrients rather than the pathogenic organisms.

Improving bowel elimination ensures a reduction in toxins being re-absorbed through the bowels back into the blood and lymph systems. This also prevents unwanted growth of pathogenic organisms.

Inflammation can be caused by irritation from undigested food both within the gut and in its passage into the surrounding tissue. *Leaky gut syndrome* is the current name given to this phenomenon. The one area where enzymes show consistent results is in reducing inflammation. Well-documented studies indicate enzymes resolve inflammation and pain in half the normal time.^{7, 8, 9} If chronic inflammation exists anywhere, the body develops stress in its attempts to resolve it. Over time, this exhausts the adrenals and our immune system, making it easier for detrimental outside influences to affect the body adversely.

Enzymes in Cardiovascular Disease

Cardiovascular disease is the leading cause of death in the Western world. It is amazing that the dietary link still evades the medical community. Doctors pay lip service to a "healthy diet" and exercise as preventive measures. Dietitians have even worked out a "food pyramid" to help us make wise eating choices. Yet, in spite of the best intentions, the death rate continues to rise and there is no chance of its diminishing in the near future based on the models we have. The food industry "fortifies" food with some 11 "essential" nutrients including B vitamins, calcium, magnesium, potassium, iron and sodium. Yet, the very substances that would digest the food are deliberately left out, destroyed for the sake of extended shelf life.

At the beginning of the 20th century, the transportation of food across a continent posed serious problems. How could a company ship raw, uncooked food without spoilage? The answer was to find a way to process the food and ship it without rotting. In the early 1900s, salicylic acid (aspirin) was used because it "prevented the action of enzymes (unorganised ferments), like diastase, emulsion, and that of mustard, also gastric digestion, fermentation by yeast, ammoniacal fermentation of urine and the germination of seeds".¹⁰ In other words, salicylic acid was "distinctly antagonistic to most enzymes".¹¹

So as early as 1903, aspirin was known to affect enzymes. It was used in this way to preserve food for extended shelf-life. As newer techniques for extending the shelf-life were discovered, aspirin was discontinued. Is it not puzzling, then, knowing how aspirin destroys most enzymes, that many patients are told to take aspirin in the prevention of heart disease? From the same reference, it is stated that salicylic acid "has a disintegrating action on the blood corpuscles". The blood-thinning properties of aspirin result from the fact that it destroys red blood cells, causing fewer of them to be found in the bloodstream!

The medical explanation of cardiovascular disease fails to explain the picture fully because it is

missing the major piece of the puzzle. Medical research is funded with billions of dollars to find the "cure". In spite of this, triple-bypass surgery is covered by insurance while the advice and wisdom of nutritionists is not. Prevention is not practised because it does not bring in the revenue that surgery, radiation and drugs do.

Much attention is paid to markers of potential heart disease. The category of lipoproteins is a good example. Lipo means "fat", and protein is self-explanatory. The four principal classes are: high density (HDL), low density (LDL), very low density (VLDL) and chylomicrons. Chylomicrons are dietary triglycerides. VLDLs are endogenous (from within the body) triglycerides, while LDL and HDL are both endogenous cholesteryl esters. Lipoproteins are necessary for the transport of lipids (fats). We are told it is healthy to have relatively high HDL levels, but should have low cholesterol (LDL), VLDL and triglyceride levels.

The endogenous group of lipoproteins is manufactured within the body, but the raw material is still derived from the fats and proteins we consume. Food must be digested in order for the body to utilise it. The abnormal accumulation of lipoproteins in the blood in a small percentage of the population represents an autosomal dominant genetic trait. But in the majority of people with cardiovascular issues, it is evidence of incomplete digestion of fats and protein—accompanied by the fact that people simply overeat. How can the body properly eliminate unused fats and protein when there simply is too much being taken in? The body must hide or store this unusable waste. Some of it is stored in tissue and some of it circulates. When the kidneys and colon cannot eliminate enough waste, the skin compensates. The skin is the largest eliminative organ. Skin eruptions are the attempts to rid the body of waste.

Unfortunately, what circulates begins to adhere to the walls of the blood vessels, clogging them up. Macrophages are summoned to remove this accumulation, but cannot do so without an adequate supply of enzymes. Enzymes produced by the macrophages for their immune function are believed to be shifted to digesting the cooked food. Obviously, this prevents the breakdown of lipoproteins which continue to build up. Foam cells associated with atherosclerosis are formed when overaccumulation of fats occurs in macrophages.^{12, 13, 14, 15}

Why has no one asked how this accumulation occurs? What is the bigger picture? It is this author's opinion that the accumulation transpires because cooked foods are not completely digested in the stomach. These undigested remnants cross the intestinal border into the blood and lymph, circulating throughout. Over time, their accumulation leads to damaged arterial tissue. Macrophages cannot break down the lipoproteins due to the exhaustion of their own enzymes. Eating cooked fats demands enzymes digesting them. Cooked foods must be broken down, even at the expense of the cardiovascular system. This daily assault of cooked foods drains lipase from many sources, especially the immune and lymph systems.

Plant enzymes taken before meals completely digest food. Therefore, no remnants can cross over into the blood. Having prevented further accumulation of undigested food, one can focus on removing the accumulated material. Enzymes taken in between meals are taken up by the body and sent to work in areas that need them the most. Enzymes will digest the undesirable lipoproteins in the blood vessels without affecting the vessels themselves. Reversal of cardiovascular disease is a matter of improving digestion and modifying dietary stress factors—in this case, fats and proteins.^{16, 17, 18, 19}

Enzymes and Immune Function

When metabolic enzymes have been constantly drained from other organs and systems (particularly the immune system) to digest cooked food, there will be little left during an immune crisis, as in fever. Regrettably, sometimes the temperature from a fever rises too rapidly, causing great distress, such as seizures in children. If there is the risk of febrile seizure in a child, suppressing the fever with drugs such as ibuprofen or acetaminophen initially may be the wise thing to do; but these drugs are known to suppress immune function. Thus, preventing a febrile seizure first and then enhancing immune function through natural means would ensure a speedier recovery. Consulting a physician is advisable in this case. Someone not prone to febrile seizure may be carefully monitored

to allow a fever to take its course but should be given plenty of fluids. Supplemental proteolytic (protein-digesting) enzymes enhance immune function, helping to destroy pathogens. These may help put an end to a fever more rapidly, significantly boosting immune function by destroying the offending pathogen.

Drinking sufficient water helps keep in check the "fire" induced by a fever. It also provides necessary moisture for enzymes produced by immune cells to defend the body. During a fever, extreme hot or cold weather conditions and strenuous exercise, enzymes are used up at a much faster rate. Becoming dehydrated due to decreased water consumption over time and the use of dehydrating agents such as caffeine and alcohol may make it more difficult for the body to resolve many of the health crises. It is believed that using supplemental enzymes during a fever augments available enzymes from white blood cells to destroy foreign micro-organisms rapidly. Taking exogenous enzymes during a fever can dramatically improve immune function, resolving a fever more quickly.

A fever's typical temperature range of 99–105°F [37.22–40.56°C] is at the high end of plant enzymes' optimal temperature range. Throughout a fever, enzymes in blood and tissue increase as defence mechanisms and for the removal of waste. Moreover, they are used up at a much faster rate. A fever is the body's way of destroying pathogenic micro-organisms through heat and increased enzyme activity.

Phagocytosis is a process where macrophages surround and engulf pathogens. They secrete enzymes which digest the invading pathogen. Referring to digestive leukocytosis, when cooked food remnants cross the brush border of the intestine into the blood, leukocytes are activated to find and finish digesting those food components in the blood. When this occurs repeatedly over time and from one generation to the next, the results are compromised immune systems. This is due to the loss of enzymes from white blood cells, which sacrifice them for digesting the food we eat. Note that Dr Pottenger's cats study showed an increase in disease from one generation to the next, and that cancer rates have continued to soar despite the "War on Cancer".

After researching library archives on the clinical use of enzymes as far back as the early 1900s, specifically the work of Dr John Beard and later that of Dr Howell, this author cannot help but ask the following questions: What if one of the pancreas's chief roles is that of an "immune" gland as well as a digestive one? What if Dr Beard's observations of the pancreas-producing enzymes destroying pre-cancerous cells (trophoblasts) are correct? One study investigated the stimulation of "digestive enzymes" of the pancreas of rabbits after exposure to histamine.²⁰ Histamine is one of the major components of the inflammatory response in mammals.

Is it possible that the term "digestive enzymes" in this case is incorrect? Are enzymes produced by such a reaction necessarily digestive, or are they responding to resolve the inflammation? Enzymes are known to speed the process of inflammation, thereby resolving it more rapidly.^{21, 22, 23, 24, 25} If the pancreas responds to histamine by producing enzymes, could they be for healing the damaged tissue and stabilising the mast cells and basophils that released the histamine in the first place?

Proteases (proteolytic enzymes) are known to mediate the defence mechanisms of the body and maintain homeostasis. It is theorised that proteolytic and other enzymes work in two ways as part of the body's immune system. Firstly, orally ingested enzymes are believed to be marked by the body as "self" and, like the character in the video game "Pacman™", are capable of digesting foreign proteins in the body that are "not-self". This would include foreign protein in the form of undigested food remnants, bacteria, viruses and other micro-organisms. Secondly, exogenous enzymes taken away from food are thought to be absorbed across the intestinal lumen and transferred into the blood, where white blood cells uptake them to be used in a variety of activities. Numerous studies have been conducted in enzyme research that point to the benefits of exogenous enzyme therapy in many immune system-related diseases. Allergies, cancers, so-called auto-immune diseases, HIV and other viral diseases, bacterial infections and fungus/yeast infestations have all been shown to be helped by enzyme therapy.^{26, 27, 28, 29}

In the event of allergies, enzymes break down the allergen/antibody complex, splitting it away from surrounding tissue when involved. Enzymes then break down the allergen into smaller components

capable of being eliminated without stressing the body. Airborne allergens typically contain both protein and polysaccharide (complex sugar) structures. After entering the bloodstream, they normally are cleaved by enzymes secreted from white blood cells. In an allergic reaction, however, there may not be enough enzymes available from white blood cells to do the work, leaving the mast cells and basophils to release histamine. There occurs the typical allergic reaction of runny nose, swollen itchy eyes, pain, heat and redness in the area of reaction. In a study from Germany, enzymes were shown to split circulating immune complexes as measured in decreased values in blood and improvement of clinical symptoms.³⁰

Several attempts have been made in using protease enzymes for patients with coeliac disease, but with little success. It had been thought that the gliadin protein structure of many grains such as wheat, rye, barley and oats was to blame for the violent reactions suffered by patients. In a study on coeliac disease, the carbohydrate portion was removed with carbohydrases, resulting in total success. There was no damage to the intestinal mucosa as there usually is in this disease.³¹

Furthermore, the protein portion was not altered. This shows once again the specificity of substrate which enzymes display.

One of the exciting factors resulting from enzyme therapy comes from a study out of Austria.³² It was shown that pancreatic enzymes as well as the constituents bromelain and papain stimulated the production of tumour necrosis factor. Tumour necrosis factor is a cytokine (a non-antibody protein which act as an intercellular mediator in an immune response) capable of haemorrhagic necrosis (destruction) of tumours and can exert cytostatic and cytotoxic activity on transformed cell lines. In other words, enzymes not only digest foreign objects but they can activate other protein products of the immune system to destroy undesirable growths in the body.

Although the above references represent only a small number of studies, it can be seen that enzymes have a therapeutic role for many disorders. Other studies include treating autism, sports injury, herpes infection, cancer and auto-immune disease.^{33, 34, 35, 36, 37}

Supplemental Enzymes for Health and Longevity

While changing over to a raw food diet (or nearly an all raw food diet) is desirable, this requires discipline.

Each one of us should take the leap into the world of raw food and experiment to find out what works for us. One can find safe, natural animal products to be used for protein intake. The best proponent of this is Aajonus Vanderplanitz. His website, <http://www.primaldiet.com>, details his experiences over a lifetime of experimenting with raw foods, especially raw animal products. There are numerous other raw food advocates located on the Internet and they have written several books, primarily dealing with a vegetarian raw food diet. Each has their arguments and points of view. In the end, it is the reader who must decide after experiencing what they believe to be in their own best interest.

Whether to be a vegetarian or not is finally decided through trial and error and education. How you feel physically, spiritually and emotionally should be noted during any transition. The impact on one's health using enzymes can only be experienced to be appreciated. We are born with enzyme deficiencies, and we have a limited potential for producing enzymes.

Dr Howell believed supplemental enzymes are important not only for health and longevity but as a type of insurance. As we grow older, our bodies do not produce as many enzymes as when we were children or young adults. What better way to ensure our health into old age than to eat enzyme-rich foods and supplement with enzymes where needed?

Clinical studies are generally funded by the pharmaceutical companies for the profits of shareholders, and tend not to be conducted for purely altruistic reasons. Furthermore, there is little interest in natural products because they cannot be synthesised and patented—at least not in the USA.

We are living in quite a crazy world where anyone can buy and implement various biological and chemical threats. Anthrax and smallpox are only the tip of the iceberg of the dangers we face. As has been written in previous issues of this magazine, there are forces interested in creating chaos

—only to hand us a solution, but at a very great trade-off. I believe that enzymes offer mankind the greatest hope of preventing and treating the threats we may face in the coming years. I also encourage you to take up this call to educate yourself in all available material from reliable sources to keep your family and loved ones safe and healthy. ∞

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About the Author:

Mark Rojek began researching alternative therapies in 1970. His studies included botanicals, mineral and vitamin requirements and diet. He interned in acupuncture with Dr Bell in Windsor, Ontario, Canada, in 1973, and graduated in 1978 with a Bachelor of Science. He studied aromatherapy, kinesiology, massage therapy and classical homoeopathy in England. In 1986, Mark began formal studies in traditional Chinese medicine, especially acupuncture. In Chicago, he worked with several holistic physicians as a medical technician and maintained a private nutritional practice. Also in 1986, he met Dr Howard Loomis, foremost living expert in enzyme nutrition, and continues to work with him. He works with several doctors in Michigan who refer to him and seek his counsel. He continues to research, lecture and counsel clients in nutrition and diet.

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