Image AwarenessHealthletter
Enzymes and Vitality

February 2002

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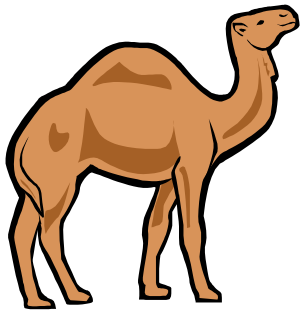

The Enzyme Concept

"Enzymes serve as the body's labor force to perform every single function required for our daily activities and are required to keep us alive. They are responsible for all of the functions of every organ system in our bodies."[1]

This is an evaluation of the importance of enzymes by a group of physicians. Roy Walford describes the manner in which enzymes function in the body with a powerful story:

"An Arab died leaving seventeen camels plus a will, which read, 'I leave half my camels to my oldest son, a third to my next, a ninth to my youngest.' Nobody knew what to do with these divisions. How can you take a half of seventeen camels? Everyone was stumped. Along came a wise man who said, 'I own a camel which I'm lending to the estate. Now there are eighteen camels. Give the eldest son 9 camels, the next son six camels, the youngest two camels. That's half, a third, a ninth, and it comes to seventeen. There's one camel left over. That's my original camel. Give it back to me.'"[2]

The extra camel powerfully illustrates the ability of an enzyme to enter into a reaction, to make that reaction possible, and yet to remain unaltered or unaffected by the reaction.

It is almost impossible to overstress the importance of enzymes. These substances make life itself possible. Lack of enzymes leads to lack of energy and the early onset of degenerative disease.

Reference:

1. Lopez, D.A., Williams, R.M., and Miehlke, M., *Enzymes: The Fountain of Life*, Charleston, S.C., The Neville Press, 1994, p. 1.

2. Walford, Roy, *Maximum Life Span*, New York: W.W. Norton & Co., 1983, pp. 104-5.

Food Enzymes

Enzymes of nutritional significance are found in two places: the food we eat and the secretions of the digestive tract. Raw foods are a significant source of enzymes. Unfortunately, the enzymes in foods are destroyed when relatively low cooking temperatures are applied to the foods.

Enzymes in foods actually work in the upper part of the stomach to predigest a meal and make it easier to break down. When foods are cooked, the body must compensate for the destruction of the enzymes by a proportionate increase in digestive enzymes.

Digestive Enzymes

Digestive enzymes are secreted in the saliva and by the stomach and pancreas. The body uses a good deal of its energy to

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produce these enzymes. When health is compromised, there is often a decreased secretion of digestive enzymes. This leads to a further deterioration in health.

The strength of digestive enzymes decreases as we age. Researchers at Michael Reese Hospital in Chicago found that enzymes in the saliva of young adults was 30 times stronger than it was in those over 69 years of age. Trypsin and pepsin, protein digesting enzymes were decreased by one fourth in older test subjects.

Reference:
Howell, Edward, Enzyme Nutrition: The Food Enzyme Concept, Wayne, New Jersey: Avery Publishing Group, 1985, pp. 27-29.

Tissue Enzymes

Tissue enzymes are substances found throughout the body which make life possible. Enzymes are necessary for immune function, the senses of sight, hearing, smell, taste, as well as for breathing and moving. Thinking, dreaming and even sexual function would be impossible without tissue enzymes.[1]

A dramatic decline in tissue enzymes accompanies the process of aging. When enzyme activity stops, we die.

Tissue enzymes are undergirded by the functioning of the pancreas and the enzymes it produces. When cooked foods are eaten, the pancreas increases in size. This enlargement of the pancreas is reflective of an increased work load on the organ when it must compensate for the loss of enzymes in cooked foods.

Howell notes that the pancreas of a mouse given cooked foods will become 2 1/2 times larger than the pancreas of an animal in the wild.[2]

Professor Jackson of the Department of Anatomy at the University of Minnesota conducted a study which further supports these findings. He fed rats an 80 percent cooked food diet and noted a 20-30 percent increase in the weight of the pancreas.[3]

This change in the pancreas reflects the increased work load and stress on this gland when large quantities of cooked food are consumed.

Reference:
1. Lopez, D.A., Williams, R.M., and Miehlke, M., *Enzymes: The Fountain of Life*, Charleston, S.C., The Neville Press, 1994, p. 1.
2. Howell, Edward, Enzyme Nutrition: The Food Enzyme Concept, Wayne, New Jersey: Avery Publishing Group, 1985, pp. 81-82.
3. Philpott, William, and Kalita, Dwight, *Victory Over Diabetes*, New Canaan, Conn.: Keats Publishing Inc., 1983, p. 63.

Role of the Pancreas

The pancreas plays an important role in health. Understanding this role helps us understand some of the potential problems associated with long term consumption of cooked and processed foods.

The pancreas secretes three substances: insulin, bicarbonates, and digestive enzymes. Each of these functions can be affected by poor diet.

Bicarbonate

Bicarbonates help to neutralize the secretions of the stomach when they enter the small intestine. Bicarbonates are meant to function in the upper part of the small intestine, not in the stomach.

Some of the benefits associated with use of antacids may be reflective of bicarbonate deficiency. Unfortunately, use of antacids which alter the functioning of the stomach can have serious consequences discussed in our research paper on stomach acid.

The normal trigger for the release of bicarbonate in the small intestine is the release of acidified food from the stomach. If the stomach is marginal in stomach acid secretion, or if these secretions are weakened by the use of antacids, the release of bicarbonate will be decreased.

James Meyer and his associated demonstrated in dogs that secretion of bicarbonate by the pancreas rapidly decreases as the acidity of the stomach decreases. Bicarbonate production began to decline when the pH of the stomach of the dogs rose above 3 and no bicarbonate at all was released as pH reached 4.5 to 5. This study suggests serious problems may be associated with long term use of potent antacids.[1]

Reduced bicarbonate contributes to the development of allergic responses of foods and to improper functioning of pancreatic digestive enzymes.

The best means of reestablishing proper bicarbonate produc-

tion is probably to provide the body essential nutrients and support for stomach acid if levels are decreased.

Reference:

1. Meyer, James H., Way, Lawrence, and Grossman, Morton, "Pancreatic bicarbonate response to various acids in the duodenum of the dog," *American Journal of Physiology*, Vol. 219, No. 4, October 1970, p. 964.

Insulin

The beta cell of the pancreas produces insulin. Cooked foods do not have as much effect on insulin as a high sugar intake. A high sugar intake can increase insulin levels in fasting blood by 50%, but such overworking of the beta cells runs the risk of exhausting them. There is an association between high sugar intake and the development of diabetes 20 years later.[1]

Recent studies by David Hill of Canada also indicate that if mothers are deficient in the amino acid taurine, offspring are born with decreased numbers of beta cells which may predispose them to diabetes. Rats on low protein diets produced offspring with only half the insulin producing beta cells of animals with adequate protein intake.[2]

Reference:

1. Yudkin, John, "Sugar and Disease," Nature, Vol. 239, September 22, 1972.

2. "Supplement 'could prevent diabetes'" BBC News, 27 March, 2001

Digestive Enzymes

William Philpott notes that pancreatic enzyme deficiencies are tied to "the stress producing factor of always eating cooked foods in which the naturally occurring digestive enzymes contained in the food are destroyed by the heating process....the more we use our enzyme potential, the faster it is going to run out. When you eat food that is raw, the enzymes contained in the food immediately start breaking down the food that is ingested. Your chances...of not putting a burden on your pancreas are better if you eat as much raw food as possible."[1]

What protection can we take if we are in the habit of consuming large quantities of cooked foods? Supplementation of the meal with small quantities of pancreatic enzymes makes sense in this context. It will lift the burden off the pancreas during the digestion of this meal and also decrease the physiological stress on this important organ.

Reference:

1. Philpott, William, and Kalita, Dwight, *Victory Over Diabetes*, New Canaan, Conn.: Keats Publishing Inc., 1983, p. 63.

A Weakened Pancreas

What are the potential problems which can develop if the functioning of the pancreas is not protected and guarded?

Diabetes

Diabetes immediately jumps to mind. Philpott records a number of studies he conducted in which pancreatic enzyme supplementation improved blood sugar responses for diabetics. for example, one young woman had a blood sugar of 400 mg.% after eating raisins. When given digestive aids with raisins the blood sugar rose to only 160 mg.%.[1]

Allergic Response

Allergic response to foods and the subsequent burden on the immune system can also be a result of a poorly functioning pancreas. Properly broken down proteins do not trigger an allergic or immune response. Incompletely digested proteins, however, can trigger very strong immune responses as the body attacks these proteins.

Lack of digestion of proteins in the digestive tract is associated with inadequate levels of hydrochloric acid and/or pancreatic enzyme secretion. These undigested proteins are absorbed and trigger many problems.

This is the physiological basis of food sensitivity and food allergy. The immune response to undigested or partially digested proteins results in a massive release of free radicals as the body attempts to destroy foreign proteins with potent free radicals. These free radicals can further damage an already impaired digestive tract aggravating digestive disorders.

Immune system activation can result in production of immune compounds which influence mood as is discussed below.

Digestive Problems

Howell notes substantial improvement of the following problems with enzyme supplementation:

- bronchial asthma
- food asthma

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- food eczema
- hay fever
- loose bowels
- overweight
- underweight
- hives

Over eighty percent of those with these problems note improvement with enzyme supplementation.[2]

Reference:

1. Philpott, William, and Kalita, Dwight, *Brain Allergies*, New Canaan, Conn.: Keats Publishing, 1980, p. 179.

2. Howell, Edward, *The Status of Food Enzymes in Digestion and Metabolism*, Chicago: National Enzyme Company, 1946, p. 11.

Mood Disorders

One day we may awake to the realization that a good deal of the depression and schizophrenia we see about us is associated with allergic responses to foods and the chemicals released by the immune system during these responses which can alter mood.

Ronald Smith argues that chemicals called cytokines released as a result of immune activation can lead to "delirium, disorientation in time, space and person, delusions, paranoia, irritability, incoherence, memory loss, inability to concentrate, depression, agitation, severe fatigue, anorexia and malaise."[1] Smith also ties depression to immune activation.[2]

Most important for the purpose of this report is the probability that the chemicals Smith discusses have their origin in the digestive tract, the site of a major portion of the immune activity in the body.[3]

If Smith's observations are correct, the highly refined and overcooked diets we consume may cause more damage than most people even imagine possible. Improving the diet with more raw foods, and augmenting digestion with enzyme support may result in similarly impressive benefits.

Reference:

1. Smith,Ronald, "The Immune System is a Key Factor in the Etiology of Psychosocial Disease," *Medical Hypotheses*, 1991, 34, pp. 49-57.

2. Smith, Ronald, "The Macrophage Theory of Depression, *Medical Hypotheses*, 1991, 35, pp. 298-306.

3. Smith, Ronald, "The Macrophage Theory of Depression, *Medical Hypotheses*, 1991, 34, pp. 225-229.

Footnote on Foods

Not all foods are a good source of enzymes when eaten raw. Some foods such as beans and peas have potent digestive inhibitors and are best eaten cooked. Digestive inhibitors are sometimes removed by sprouting or other means.