Technical Bulletin

By Dr. Larry J. Milam, HMD, PhD.

The information in this article is not intended as medical advise, but only as a guide in working with your health care professional.

Phyto Opti-Zymes™

Digestive Enzyme Support

A healthy digestive system is the gateway to vibrant health and enzymes are the key to opening the door.

Enzymes are protein-based substances found in every cell of every living plant and animal, including the human body. Without enzymes, life would cease to exist.

All life processes, such as digestion and breathing are regulated in part by a complex series of chemical reactions we refer to as *metabolism*. Metabolism reflects two actions: anabolism and catabolism. *Anabolism* is the process of "building up", in which simpler substances are combined to form more complex substances. i.e. forming new tissue.

Catabolism is the process of breaking down substances into simpler substances, such as what occurs in digestion. Enzymes are catalysts that make *anabolism* and *catabolism* possible and effect their efficiency.

In addition to their vital role in *metabolism*, enzymes are also ***food potentiators.*** All foods have potential nutrients. It is enzymes that have the ability to turn these potential nutrients into available nutrients.

Despite their importance in metabolism, according to Dr. Edward Howell, considered the father of enzyme research, the number of enzymes each cell can produce is limited. To multiply our *"enzyme store"*, we must replenish them from our foods. .

Historically, the best way to replenish this store has been to include fresh fruits, vegetables and grains in our diet. Almost all nutritional authorities recommend that we eat three to five servings of vegetables and two or three servings of fresh fruit daily to provide the body with rich sources of vitamins, minerals and enzymes.

Unfortunately, statistics reveal that fewer than 10% of Americans meet these guidelines.

- 50% of those polled indicated that they eat no vegetables
- 70% eat no vegetables or fruit rich in vitamin C
- 80% eat no vegetables or fruits rich in carotenoids.

Instead, the popular diet consists of hamburgers, french fries, sugar loaded soft drinks, coffee and other fast foods. Moreover, most of our foods are fried, microwaved, baked, canned, frozen, dried or irradiated, all processes that deplete valuable enzymes. With our ***food potentiators*** destroyed, vital nutrients are not available to fuel the body.

Signs of Enzyme Deficiency

While not all signs of enzyme deficiency are obvious, the following symptoms can be considered early warning signs:

- Disturbed Digestion
- Indigestion and heartburn
- Slow to heal
- Stomach Upset
- Gas
- Bloating
- Weight problems
- Low energy levels, fatigue
- Allergies
- Excessive Aging
- Slow recovery from illness

A number of factors can inhibit and destroy important enzymes in our food and our bodies:

Cooking

For thousands of years, humans ate their food raw. Now, our diet is primarily, if not exclusively, composed of cooked food.

There are benefits to cooking: it breaks down tough fibers, softens food and kills bacteria. It does, however, kill enzymes needed for digestion.

It is generally agreed that temperatures over 140° F (some say as low as 107° F) will kill the enzymes in food. Almost every method of cooking devised is hot enough to destroy enzymes.

- Water boils at 212° F . If food is boiled enough to just soften fibers, it must boil for several minutes. In order to cook potatoes, for example, their internal starch molecule must reach the "gelatinization stage", approximately 150° F
- Frying and deep-frying (used in most fast food restaurants) may reach temperatures of 400° F!
- Frying an egg requires the temperature to reach between 255° F and 250° F.
- Baking requires a minimum of 350° F.
- Broiling requires 450° F to 500° F.

Milling and Refining

Modern technology used to refine wheat, rice, oats and other grains not only depletes the enzymes, but also destroys many vitamins and minerals that your body needs in order to func-

tion. *Of the 22 nutrients decreased during the milling of white flour, only four (niacin, thiamine, riboflavin and iron) are replaced when flour is enriched.* Fortifying, however, does not replace the lost enzymes.

Drying

Extending shelf life and preserving the color of dried foods means halting maturation and ripening before they are dehydrated. Consequently, many dried foods are often pretreated to kill the enzymes. The most common methods used to inactivate enzymes are blanching the food with hot water, or steaming followed by rapid cooling. These steps can set the color, kill microorganisms and shorten drying time. Another method used to inactivate enzymes that cause foods to turn brown is to treat them with sulfur compounds.

Canning

Once food is canned, it must be heated in its sealed container (usually glass or metal) to kill microorganisms. Canning normally requires temperatures of 212°. Most, if not all enzymes are destroyed in this process.

Irradiation

Irradiation is a relatively new process that exposes food to as much as 300,000 Rads (about the same amount of radiation as 30 million chest x-rays). There is evidence that irradiated foods lose vitamins that are important enzyme cofactors, especially B complex vitamins, plus vitamins A, C and E.

Preservatives and Flavor Enhancers

Sodium Nitrate can reduce the activity of digestive enzymes in the small intestines. Many artificial flavorings can cause allergic reactions and some may also inactivate many of the body's enzymes. For example, the flavoring agent, benzaldehyde, made synthetically through the oxidation of toluene or from benzol chloride and lime, effectively inactivates glutathione peroxidase, an important antioxidant enzyme. This enzyme is responsible for removing hydrogen peroxide from the brain. Inactivating the enzyme may interfere with nerve transmissions.

Salt and **Sugar** are both enzyme destroyers. Salt is an enzyme inhibitor because it denatures proteins.

Excessive Alcohol Consumption

High alcohol intake can impair the digestion and absorption of nutrients, especially the B vitamins needed as coenzymes.

Acetaldehyde, a by-product of alcohol metabolism, causes B vitamin deficiencies and deactivates an enzyme involved in prostaglandin production.

A number of enzymes, especially trypsin and chymotrypsin, which help digest proteins, are inhibited by alcohol and acetaldehyde. The higher the alcohol consumption, the greater the enzyme inhibition.

The Sun Rays

A recent study analyzed the activities of the antioxidant enzymes superoxide dismutase (SOD) and catalase in the body. One-half hour after UVB radiation, they found enzyme activity had decreased to almost 60% of the control values.

Medications

Drugs can affect your enzymes and your nutritional status in many ways including ***decreasing the appetite, altering food digestion*** and ***interfering with the absorption of nutrients***. They can affect ***metabolism*** and ***excretion***. In addition, drugs can directly affect specific enzymes and enzyme systems.

According to Professor Thomas Devlin, Ph.D., author of Textbook of Biochemistry (New York: Wiley-Liss, 1993), *enzyme inhibition is the goal of almost all modern drug therapy.* Many drugs, including antibacterial, antiviral and antitumor drugs are designed to inhibit specific enzymes and, therefore, interfere with certain metabolic processes.

For example, antacids neutralize stomach acid which is necessary to activate the enzyme pepsin.

Should one supplement with enzymes? The answer is a resounding, YES.

Dr. Edward Howell states, *"The length of life is inversely proportional to the rate of exhaustion of the enzyme potential of an organism. The increased use of food enzymes promotes a decreased rate of exhaustion of the enzyme potential."*

Phyto Opti-Zymes™ by New Spirit Naturals

- Phyto Opti-Zymes™ is a complete food grade multienzyme complex composed of all plant based enzymes. (no animal source enzymes are used)
- Phyto Opti-Zymes™ are formulated to work in a wide pH range (from 3 - 9+). This is the most common range in the body.

Phyto Opti-Zymes™ contain a powerful combination of enzymes, including:

- Three Proteases (protein digesting enzymes)
- Seven Carbohydrases (carbohydrate digesting enzymes), including alpha and beta amylase, cellulase, lactase, sucrase, invertase and maltase.
- A proprietary *acid stable* lipase along with peptizymes and bromelain from pineapple.
- A special proprietary hemicellulase is included to assist in the breakdown of indigestible fiber.

Phyto Opti-Zymes™ are prepared in a special base of enzyme enhancers (Jerusalem Artichoke and fructo-oligosaccharides) that help cultivate healthy probiotics which aid in digestion and absorption.

Recommendations for Using Phyto Opti-Zymes™

- When taking enzymes, consume at least 6 to 8 oz. of water. Water is required to activate the "water craving" hydrolytic enzymes. The moisture in the mouth may not be sufficient.
- **To improve digestion**: enzymes should be taken just before, during or just after meals.
- **To complete the digestive process while you sleep**: Take enzymes just before retiring.
- **For systemic therapy**: Take enzymes either one hour before meals or at least two hours after a meal. Taking them on an empty stomach is suggested so that they can be absorbed quickly and assist various body systems in fighting inflammation as well as acute and chronic diseases.
- **To obtain the best level of enzyme concentration within the bod**y: Spread the dose over the day. i.e. rather than taking 9 capsules at once, it is better to take 3 capsules, three times a day.

Supplement Facts

Serving Size: One or two capsules per day
Servings per bottle: 60 Capsules

	Amount per Serving	% Daily Value
Amylase	11,025 DU	†
Amylase II	70 AGU	†
Protease I	38,675 HUT	†
Protease II	4,200 PC	†
Protease III	53 SAP	†
Peptizymes SP® (peptidase)	175 SP	†
Lipase (Acid Stable)	438 LU	†
Cellulase	158 CU	†
Lactase	508 LAC	†
Maltase	53 DP	†
Invertase	35 INVU	†
Bromelain	7000 FCC	†
HemiSeb® (hemicellulase)	175 HSU	†
Proprietary blend	10 mg	†
Jerusalem Artichoke (Helianthus tuberosus L.) (Tuber) and FOS (fructo-oligosaccharides)		

† Daily Value not established
All enzymes are non-animal source

Other ingredient: vegetable based capsule

Therapeutic use of Enzymes

Dr. Anthony Cichoke in his book, The Complete Book of Enzyme Therapy, cites the use of enzymes in the following conditions:

- **Malabsorption**
- **Malnutrition**
- **Intestinal endotoxins**
- **Dysbiosis**
- **Leaky gut syndrome**
- **Food Allergies**
- **Autoimmune diseases**
- **Inflammatory bowel**
- **Constipation**
- **Diarrhea**
- **Detoxification**
- **Bloating**
- **Flatulence, abdominal gas**
- **Fibromyalgia**
- **Shingles**
- **Sport injury**
- **Sinusitis**
- **Sciatica**
- **Rheumatoid Arthritis**
- **prostate problem**
- **PMS**
- **Steatorrhea**
- **Poor digestion**
- **Pancreatic insufficiency**
- **Pancreatitis**
- **Candidiasis**
- **Canker Sores**
- **Carbohydrate intolerance**
- **Lactose intolerance**
- **Cancer**
- **Chronic Fatigue Syndrome**
- **Dermatitis**

References

Dr. Anthony J. Cichoke, The Complete Book of Enzyme Therapy, Avery Publishing Group, New York, 1999.

Dr. Edward Howell, Enzyme Nutrition, The Food Enzyme Concept, Avery Publishing Group, New York, 1985.

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