ENZYMES

SECRETS OF USING ENZYMES TO HEAL

- **It is said that half the allergic or sensitive reactions to certain foods would be gone if a person used enzymes.**
- **Bernard Jensen given a short time to live with late stage cancer, reversed the disease in 8 weeks, using enzymes.**

NOTES ABOUT ENZYMES:

*** enzymes are a protein molecule that has a specific function in the body from digesting food to repairing muscles and bone. Assimilation as well as detoxification are dependent on enzymes.**

*** all raw foods naturally contain the proper types and proportions of enzymes necessary to digest itself whether in human consumption or in the eventual decomposition in the natural world. When raw food is eaten, chewing ruptures the cell membranes and releases the indigenous food enzymes to begin the selective breakdown of substrates. Protease breaks long protein chains (polypeptides) into smaller amino acid chains and eventually into single amino acids. Amylases reduce large carbohydrates (starches and other polysaccharides) to disaccharide including sucrose, lactose and maltose. Lipase digests fats (triglycerides) into free fatty acids and glycerol. Cellulases (not found in the human system) break the bonds found in fiber matrices which envelope most of the nutrients in plants. Cellulase increases the nutritional value of the fruits and vegetables.**

*** enzymes are destroyed in temperatures above 118o F. Cooked and processed food loses 100% of its enzymes.**

*** sugar in the form of raw sugar cane contains enzymes, B vitamins and chromium. It supplies the enzymes it needs to be broken down and digested. Once processed to its white-crystal form, the enzymes, B vitamins and chromium must all come from the body's tissue stores in order for the sugar to be metabolized.**

*** it is suggested that taking plant enzymes before a meal helps breakdown of food, thereby sparing the enzymes from the pancreas. Digestion by plant enzymes occurs early enough in digestive process to trigger reduction in pancreatic secretion. Overwhelming evidence shows that food enzymes play an important role in digestion by predigesting food in the upper stomach before hydrochloric acid has ever been secreted. Supplementation of food enzymes is necessary in today's society due to the prevalence of cooked and/or processed foods. Food enzymes are essentially destroyed at 118oF, thus most modern methods of food preparation leave food devoid of digestive enzyme activity. Placing the full digestive burden on the body, the digestive process becomes over-stressed and vital nutrients are not released from food for assimilation.**

*** unlike supplemental enzymes of animal origin, plant enzymes work at a much wider pH range. Food sits in the upper portion of the stomach for as long as an hour before gastric secretins begin action.**

Studies have shown that the enzymes in saliva continue their digestive activity in the upper stomach and can digest up to 30% of the ingested protein, 60% of the ingested starch and 10% of ingested ft during the 30-60 minutes after consumption. Although salivary enzymes accomplish significant amounts of digestion, their activity is limited to a pH level above 5.0. Exogenous plant enzymes are active in the pH range of 3.0 to 9.0 and can facilitate the utilization of a much larger amount of protein, carbohydrates and fat before HCL is secreted in sufficient amounts to neutralize their activity.

Plant enzymes work at the pH found in part of the stomach, where food can sit for a while before gastric secretions begin action - and can improve food nutrient utilization.

There are 3 main categories of enzymes:

Metabolic: thousands of enzymes that are made by the body to help with breathing, thinking, talking, moving and immunity. Antioxidant enzymes are most talked about because they help to quench free radicals which need to be controlled in order to stop the development of disease.

Pancreatic: humans and animals have pancreatic enzymes, secreted mainly by the pancreas but also in the mouth, small intestine and stomach and these play a role in digestion of food. The pancreas secretes insulin into the blood and produces and secretes alkaline fluid (sodium bicarbonate) into the upper portion of the small intestine which alkalizes the acidic contents that arrived there from the stomach.

There are about 22 pancreatic enzymes including: amylase, lipase, and proteolytic (breaking down protein) enzymes such as protease, which continue the digestion of food in the duodenum (beginning of small intestine) after plant enzymes have begun the digestive process in the stomach.

Plant enzymes: these are present in raw food and are essential in the proper digestion of food. They are present in all raw plants and are available as supplements. Plant enzymes include protease (digests protein), amylase (digests carbs), lipase (digests fat, disaccharides (digest sugar), and cellulase (digests fiber). Since cellulase is not made by the human body, it is important to chew all raw foods well in order to release the cellulase enzyme.

Unlike pancreatic enzymes, these enzymes work in the mouth and in the stomach where they predigest foods. Plant enzymes also operate in the small intestine, aiding pancreatic enzymes in continuing the digestive process.

Each plant enzyme does its work only at its own specific pH and temperature ranges and in the presence of moisture (water). Outside its pH range, the enzyme is deactivated but not destroyed, however outside of this temperature range, the enzyme is denatured (destroyed). Enzymes, more heat sensitive than vitamins, are destroyed by cooking temperatures about 118oF, pasteurization,
canning and microwaving.

Plant enzymes initiate predigestion of foods in the upper portion of the stomach. They can

eliminate digestive problems leading to food allergies by increasing the supply of the deficient enzyme during this predigestive process.

Eating a lot of raw foods or taking plant enzymes doesn't make the pancreas lazy because the pancreatic enzymes do not operate in the stomach. And indeed, food enzymes spare the pancreas from having to compensate for inadequate predigestion. The pancreas was never meant to be totally responsible for digestion. Early humans ate primarily raw foods.

Taken as a supplement on an empty stomach, plant enzymes enter the bloodstream where they assist the immune system by digesting and disposing of toxins (any substance that does not belong in the blood) and "eating" the protein coating on certain viruses, enabling immune system workers to then destroy them.

Plant enzymes for inflammation: By taking plant enzymes on an empty stomach as mentioned in the previous sentence, inflammation is helped to reverse. Each type of enzyme has a specific anti-inflammatory action and will relieve inflammatory conditions related to a deficiency in that enzyme.

Plant enzymes for bacteria: Since plant enzymes digest toxins rather than killing them off (as antibiotics do in the case of bacterial infection), the process involves no side effects, if the digested toxins can be properly eliminated through urinary tract, colon, skin and lungs.

Theurapeutic summary: Supplemental plant enzymes can thus be used as therapy in three ways depending on the health condition and needs:

1. **to optimize digestion, absorption and assimilation of food which in turn keeps a health pH balance in the blood;**
2. **to reverse nutritional deficiencies;**
3. **as anti-inflammatories and detoxifying agents.**

MAIN DIGESTIVE ENZYMES:

PROTEASE: aka Proteolytic enzyme. A digestive enzyme that causes a breakdown of protein. Also endopeptidase, exopeptidase. Avoid these if stomach ulcer is present. Proteases secreted by the pancreas (trypsin, chymotrypsin and carboxypeptidase) break protein molecules into single amino acids. As well as helping protein digestion, proteases also help keep the small intestine free from parasites including bacteria, yeast and protozoa. These enzymes are present in bacteria and plants, but are most abundant in animals, in the stomach, protein materials are attacked initially by the gastric enzyme pepsin; when the protein material is passed to the small intestine, proteins, which are only partially digested in the stomach, are further attacked by proteoplytic enzymes secreted by the pancreas. These enzymes are liberated in the small intestine from inactive precursors produced by the acinar cells in the pancreas. The precursors are called 'trypsinogen, chymotrypsinogen, proelastase, and procarboxypeptidase'. When the pancreatic enzymes become activates in the intestine, they convert proteins into free amino acids which are easily absorbed by the cells of the intestinal wall.

Trypsinogen is transformed to trypsin by an enzyme enterokinase, secreted from the walls of the small intestine. Trypsin then activates the precursors of chymotrypsin, elastase and carboxypeptidase.

The pancreas produces a protein that inhibits trypsin. It is thought that in this manner the pancreas protects itself from autodigestion.

A lack of proteases or other digestive secretions greatly increases an individual's risk of

having an intestinal infection including chronic candida infections of the gastrointestinal tract. Proteases also prevent tissue damage during inflammation, the formation of blood clots and the depositing of immune complexes in body tissues that occurs in such diseases as rheumatoid arthritis and lupus.

Supplement sources:

Animal: bovine(cow) and porcine (pig) pancreas

Plant: various including pineapple (bromelain) and papaya (papain)

Microbial: aspergillus oryzae, aspergillus niger, aspergillus melleus, aspergillus saitoi, rhizopus niger, bacillus subtillis, bacillus licheniformis, streptoyces caespitosus, bacillus polymyxa, streptomyces griseus, staphylococcus aureau, aspergillus sojae, serratia species.

Food: pineapple, papaya, figs, guava, kiwi, ginger root, green plants, mushrooms, soybean, wheat, kidney bean.

AMYLASE: enzymes occurs in saliva and pancreatic juice and aids the digestion of starch, which it breaks down into glucose, maltose and dextrins. Amylase will also hydrolyze glycogen to yield glucose, maltose, and dextrins. So, amylase breaks down carbs such as starch, glycogen and related polysaccharides and oligosaccharides. It is used to aid digestion usually in combination with other enzymes and it is used in pancreatic enzyme replacement therapy.

Supplementary Sources:

Animal: bovine and porcine (pig) pancreas

Plant: barley

Microbial: Aspergillus aureus, aspergillus niger, aspergillus oryzae, bacillus licheniformis, bacillus steraothermophilus, bacillus substillis, rhizopus niveus, and rizopus oryzae.

Food: raw sweet potato; corn, barley, wheat, oats, rice and other grains. Red lingzhi (reishi mushroom), beet roots/leaves/stems; banana, cabbage, egg, kidney bean, maple sap, milk, mushrooms, raw honey, sugar cane.

LIPASE: An enzyme produced by the pancreas and the glands of the small intestine that breaks down fats into glycerol and fatty acids during digestion. Lipase will therefore improve poor fat digestion in cases of lipid malabsorption due to liver or gall insufficiency or surgical intervention. It is used as a digestive aid and also in pancreatic enzyme replacement therapy. It decreases fat levels in stools.

As a supplement, it is best taken orally.

Supplementall Sources.

Animal: bovine (cow) and porcine (pig) pancreas and calf or lamb forestomachs

Microbial: Rhizopus arrhizus, Rhizopus japonicus, aspergillus oryzae, aspertillus niger, Candida rugos (formerly cylindracea), Staphylococcus aureus, Welchia perfringens, Candida paralipolytica, Mycotorula llipolytica, Geotrichum candidum, Pseumondas, Rhizomucor (mucor) miehei and Chromobacter viscosum.

Food: avocado, wheat germ, rice, maize, green plants, soy beans, coconuts, flaxseeds, rape seeds, corn and other germinating plants containing relatively large amounts of fats.

PANCREATIN: (Supplement) Extract obtained from the pancreas containing the pancreatic enzymes.

Pancreatin is administered for conditions in which pancreatic secretion is deficient. It breaks

down proteins, carbs and fats because it contains many enzymes (trypsin,m chymotrypsin, amylase and lipase). There are at least 4 proteolyic enzymes with different substrates found in pancreatin.

Low dose of pancreatic enzyme (pancreatin) is referred to as 1X or 4X. Full strength products are preferred - recommended 10X USP dosage is 350-700 mg three times daily immediately before meals when used as a digestive aid. Take 10-20 minutes before meals or on empty stomach if used as anti-inflammatory.

Supplemental pancreatin is used to treat pancreatic insufficiency or after removal of the pancreas. It is used to treat steatorrhea (excessive fat in stools due to malabsorption), and after having gastrectomy, in the treatment of cystic fibrosis. Calcium increases its activity. It is best taken orally.

Supplemental Sources:

Animal: bovine(cow) or porcine (pig) pancreas

PANCREATIC JUICE is digestive juice secreted by pancreas. Stimulated by hormones secreted by the duodenum which in turn is stimulated by contact with food from the stomach. If duodenum produces the hormone "secretin the pancreatic juice contains a large amount of sodium bicarbonate which neutralizes the acidity of the stomach contents. Insufficiency creates bloating, discomfort, gas, indigestion, passing of undigested food in stool. Mild insufficiency is common especially in elderly. Insufficiency plays major role in many cases of food allergies, esp if person has multiple allergies.

Another hormone "cholecystokinin) causes the production of a juice rich in digestive enzymes, including trypsinogen and chymotrypsinogen (which are converted to trypsin and chymotrypsin in the duodenum), amalyse, lipase, and maltase.

LACTASE: common deficiency and well-known form of carbohydrate intolerance. Digests and breaks down lactose (milk sugar) into glucose and galactose. Most mammals, including humans, have high intestinal lactase activity at birth. In some cases this activity declines to low levels during childhood and remains low in adulthood. Low lactase levels cause maldigestion of milk and other foods containing lactose. It is estimated that approximately 70% of the world population is deficient in intestinal lactase and presumed to be unable to digest dairy products. Supplemental lactase has been found to decrease symptoms of lactose intolerance associated with consuming dairy foods.

Supplemental Sources:

Microbial: aspergillus niger, aspergillus oryzae, Saccharomyces lactis, Candida pseudotropicalis, Kluyveromyces lactis, and E coli.

Food: tomatoes, persimmons, apples, peaches, almonds and milk.

SUCROSE aka SUCRASE or Sucrose alpha-glucosidase, Sucrase isomaltase): Invertase is another disaccharidase that works to break down sucrose (refined table sugar/sucrose, and maltose) into glucose and fructose. The prevalence of processed and highly refined foods in the American diet means that we consume a great amount of this sugar which can contribute to undue digestive stress.

It is theorized that sucrose intolerance is a contributing factor in many allergies.

Supplemental invertase can increase the assimilation and utilization of this sugar. The additional supplementation of the carbohydrates (Malt Diastase assures the breakdown of starch into maltose and then into glucose molecules, allowing greater absorption of this energy-giving sugar. Inclusion of these sugar-breaking enzymes gives this formula broad base for improving nutrition. It is used as a digestive aid to break down carbs. A liquid form of sucrase is effective in enzyme replacement therapy if suffering from congenital sucrase-isomaltase deficiency. It is best taken orally.

Supplemental Sources:
Microbial Saccharomyces sp.
Food: green plants, beet leaves and stems and banana

PEPSIN: Stomach enzyme that begins digestion of proteins by splitting them into peptones. It is produced by the action of hydrochloric acid on pepsinogen, which is secreted by the gastric glands. Once made, pepsin itself can act on pepsinogen to produce more pepsin. Pepsin is used in digestive aids and pancreatic enzyme replacements. Best taken orally.

Supplemental Source:
Animal - porcine (pig) stomach

CELLULASE: Cellulase is the only enzyme that is not made by the body and is obtained only from food sources or enzyme supplements. This enzyme helps process cellulose which is a carbohydrate consisting of thousands of linked glucose units. Cellulose is an important constitute of plant cell walls. Cellulose cannot be digested by man and is a component of dietary fiber (roughage).

It is used as a digestive aid and also in pancreatic enzyme replacement. It is often used to treat gastric bezoars(hard masses composed of hair and/or fruit and vegetable fibers that can form in the alimentary canal). Best taken orally.

Supplemental Sources:
Microbial: aspergillus oryzae, aspergillus niger, Rhizopus sp., Trichoderma longibrachia turn (formerly reesi)
Food: avocado, peas, oat sprouts, red lingzhi (reishi) mushroom.

MALTASE: enzyme in saliva and pancreatic juice that converts maltose into glucose during digestion.

Maltose is a sugar consisting of two molecules of glucose. Maltose is formed from the digestion of starch and glycogen and is found in germinating cereal seeds. It breaks down the carbohydrates maltose and starch, and is used as a digestive aid.

Supplemental Sources:
Microbial: aspergillus niger, Saccharomyces sp. and various yeast species.
Food: usually found in plant tissues that contain amylase like brewer's yeast, rice, barley and other grains, beet leaves, green plants, sugar cane, banana, and mushrooms.

10 Day Regime to Re-Establish Proper Enzyme Function (from Hanna

Kroeger)

1 pint freshly squeezed orange juice
1 pint freshly squeezed grapefruit juice
1 pint water with the juice of 3 limes
1 pint water with the juice of 2 lemons
1 pint frozen pineapple juice, diluted
1 pint papaya juice, diluted
12 whole eggs
6 egg yolks.

Frozen raspberries or strawberries add a delicious flavor.
Beat eggs in clockwise direction and mix into fruit juice mixture in clockwise direction.
This is a one day's supply. For breakfast eat one kind of fresh fruit.
For supper eat green salad and/or sprouts with almond dressing and one steamed vegetable

PROTEOLYTIC ENZYMES

Proteolytic enzymes (or proteases) refer to the various enzymes that digest (break down into smaller units) protein. These enzymes include the pancreatic proteases chymotrypsin and trypsin, bromelain (pineapple enzyme), papain (papaya enzyme), fungal proteases, and Serratia peptidase (the "silk worm" enzyme). Preparations of proteolytic enzymes have been shown to be useful in the following situations:

- **Cancer**
- **Digestion support**
- **Fibrocystic breast disease**
- **Food allergies**
- **Hardening of the arteries (atherosclerosis)**
- **Hepatitis C**
- **Herpes zoster (shingles)**
- **Inflammation, sports injuries and trauma**
- **Pancreatic insufficiency**
- **Multiple sclerosis**
- **Rheumatoid arthritis and other autoimmune disorders**
- **Sinusitis, asthma, bronchitis, and chronic obstructive pulmonary disease**

Proteolytic enzymes in cancer therapy

Proteolytic enzymes have a long history of use in cancer treatment. In 1906, John Beard, a Scottish embryologist, reported on the successful treatment of cancer using a pancreatic extract in his book The Enzyme Treatment of Cancer and its Scientific Basis. Proteolytic enzymes have been promoted by numerous alternative cancer practitioners for many years, but most recently by Nicholas Gonzalez, M.D.,
who is evaluating the benefit of proteolytic enzymes in patients with advanced pancreatic cancer in a large-scale study, funded by the National Institute of Health's National Center for Complementary and Alternative Medicine, with collaboration from the National Cancer Institute. This larger trial is a follow-up to a smaller study that showed dramatic improvements in these patients.
The clinical research that currently exists on proteolytic enzymes suggests significant benefits in the treatment of many forms of cancer. Specifically these studies have shown improvements in the general condition of patients, quality of life, and modest to significant improvements in life expectancy. Studies have consisted of patients with cancers of the breast lung, stomach, head and

neck, ovaries, cervix, and colon; and lymphomas and multiple myeloma. These studies involved the use of proteolytic enzymes in conjunction with conventional therapy (surgery, chemotherapy and/or radiation) indicating that proteolytic enzymes can be used safely and effectively with these treatments. Proteolytic enzymes are not recommended for at least two days before or after a surgery as they may increase the risk of bleeding.
Proteolytic enzymes have been shown to be quite helpful in speeding up post-surgical recovery and relieving a complication of surgery and radiation known as lymphedema.

Are proteolytic enzymes actually absorbed?

Yes. One of the outdated arguments against the effectiveness of orally administered proteolytic enzymes was that they either got digested or they were too large to be absorbed. Absorption studies with the various proteolytic enzymes have confirmed that they are absorbed intact. In fact, they appear to be actively transported across the gut wall.
Since stomach acid can destroy proteolytic enzymes, the best formulas are "enteric coated" – meaning that the pills have a coating around them to prevent the pill from being broken down in the stomach. An enteric-coated pill passes into the small intestine, where due to the pH change it will break down there.
Can taking proteolytic enzymes actually improve digestion?
Yes, in fact, using enzyme preparations to support proper digestive function is used in conventional medicine in cases of pancreatic insufficiency and cystic fibrosis (a rare inherited disorder). Pancreatic insufficiency is characterized by impaired digestion, malabsorption, nutrient deficiencies, and abdominal discomfort.

Do the proteolytic enzymes digest blood proteins?

NO! There are special factors in the blood that block the enzymes so that they do not digest blood proteins.
How do the proteolytic enzymes help autoimmune conditions like rheumatoid arthritis?
The benefits in some inflammatory conditions appears to be related to helping the body breakdown immune complexes formed between antibodies produced by the immune system and the compounds they bind to (antigens). Conditions associated with high levels of immune complexes in the blood are often referred to as "autoimmune diseases" and include such diseases as rheumatoid arthritis, lupus, scleroderma, and multiple sclerosis. Higher levels of circulating immune complexes are also seen in ulcerative colitis, Crohn's disease, and AIDS.4-6

What other conditions might proteolytic enzymes be helpful for?

The list of conditions benefited by pancreatic enzyme supplementation seems to be growing all the time.

One potential use is in the treatment of viral related illness including hepatitis C and herpes simplex infections. In one study in the treatment of herpes zoster (shingles) an orally administered proteolytic enzyme preparation was shown to be more effective than the standard drug therapy (acyclovir).

In a study in patients with hepatitis C, proteolytic enzymes were shown to be slightly superior to alpha-interferon in improving laboratory values and symptoms.

Proteolytic enzymes also appear to be quite helpful in recovery from surgery, fibrocystic breast disease, acute and chronic sinusitis and bronchitis, and chronic obstructive pulmonary disease and asthma.

Best proteolytic enzymes

In order to get the most out of proteolytic enzymes it is essential to use a high quality product at an adequate dosage. To judge the quality of an enzyme preparation it is important to know what you are looking for. Most of the proteolytic enzymes have well established guidelines developed by the United States Pharmacopoeia (USP) or the Food Chemical Codex (FCC). Looking at one of the enzyme products, it contains the following ingredients per enteric-coated tablet.

Pancreatin (8X)	**200 mg.**
Papain (30,000 USP/mg)	**120 mg.**
Peptizyme SP (200,000 SPU/g)	**52 mg.**
Bromelain (1,200 MCU/g)	**50 mg.**

Pancreatin refers to pancreatic enzyme preparations prepared from fresh hog pancreas. The two primary proteases of pancreatin are chymotrypsin and trypsin (also available from ox bile). Papain and bromelain are proteolytic derived from papaya and pineapple, respectively. Peptizyme SP (a special serrapeptase) is derived from a non-pathogenic bacteria called Serratia E15, that resides in the intestines of silk worms. It is also called "silk worm" enzyme as it is the enzyme used to breakdown the cocoon of the silk worm.

The Miracle Enzyme - Serratiopeptidase

Dr. Han's Nieper, a legendary medical doctor known for his extensive use of proteolytic enzymes, called serratiopeptidase the "Miracle Enzyme." Dr. Nieper used this anti-inflammatory enzyme primarily to open up clogged arteries supplying the brain. This enzyme is even more powerful than the pancreatic enzymes chymotrypsin and trypsin. It has been used in Europe and Japan for over 25 years. As evident in the following Table, good clinical results have been demonstrated in clinical trials. In addition to its general anti-inflammatory effects, it is particularly beneficial in fibrocystic breast disease as well as upper respiratory tract conditions like sinusitis, bronchitis, asthma, and chronic obstructive pulmonary disease due to its ability to improve the structure and function of the mucus lining.

General dose of Serratiopeptidase is 10-30 mg a day. Just three 5mg tablets daily for 12-18 months are sufficient to remove fibrous blockages from constricted coronary arteries. Start with 10mg daily, work up to 20mg. (10mg = 20,000 units). Take is on an empty stomach, say 1 hr before or 2 hr after meals. The caps or tablets should be enteric coated so they survive the stomach acid and can then be activated in the small intestine. You can get serratiopeptidase that contain 120,000 units per capsule which means you need to only take one a day – must be on empty stomach, like first thing in the morning, about ½ hr or more before breakfast.

Clinical results from trials with this "Miracle Enzyme"

Condition	**Cases**	**Effectiveness**
Post-surgical swelling	**742**	**88.5%**
Sports injuries/trauma	**208**	**87.5%**

Inflammatory disease	**906**	**77%**
COPD/Bronchitis	**556**	**74%**
Enhancement of antibiotic	**124**	**79%**
ENT infection and inflammation	**140**	**97.3%**
Fibrocystic breast disease	**70**	**85.7%**

What is the proper dosage of proteolytic enzymes?

The typical dosage for the formula listed above is one to three capsules 10-20 minutes before meals or on an empty stomach when non-digestive effects are desired. If it is being taken for digestive support, then it can be taken just before meals.

Are proteolytic enzymes preparations safe?

Proteolytic enzymes are generally well-tolerated and are not associated with any significant side effects.
Even in people with presumably normal pancreatic function, taking proteolytic enzymes produced no untoward side effects nor did it reduce the capacity for these subjects to produce their own pancreatic enzymes. However, it is recommended to utilize these preparations only when there is apparent need.
Although no significant side effects have been noted with any of the proteolytic enzymes, allergic reactions may occur (as with most therapeutic agents).
Pancreatic enzymes should not be used by anyone allergic to pork.
Bromelain should not be used in anyone allergic to pineapple.
Papain should not be used in anyone sensitive to papaya.

NATTOKINASE, star enzyme to reduce clotting

After COVID in 2022, and taking the Covid shots, many experienced dangerous blood clotting. Nattokinase came to the rescue.

Nattokinase is a serine protease enzyme, extracted initially from a Japanese food called Natto. It is produced by adding the bacteria Bacillus subtilis var. natto (which also produces the enzyme), to boiled soybeans. It is very popular, and very effective.

There are some people who should not take Nattokinase:

- **If you are taking anticoagulant medications. You are already thinning the blood to prevent blood clotting, taking Nattokinase can be overkill and cause too thin of blood. Drugs that are anticoagulant: Warfarin (coumadin), Rivaroxaban (Xarelto); Apixaban (Eliquis); Dabigatran (Pradaxa); Edoxaban (Savaysa); Heparin or low molecular weight heparins.**
- **If you are taking antiplatelet therapy (aspirin in higher doses); Clopidogrel (Plavis); Ticagrelor (Brilinta); Prasugrel (Effient); Dipyridamole.**
- **If you have a bleeding disorder: Hemophilia A or B; Von Willebrand disease; Platelet function disorders; Vitamin K deficiency.**
- **If you are going into surgery within the next 2 weeks. This includes dental surgery, colonoscopy with planned biopsy, cardiac catheterization. You don't want to thin the blood out when you doing any cutting, encouraging excessive bleeding.**
- **If you are pregnant or nursing.**
- **If you have had a recent stroke or GI Bleed with the last 6 months.**

You can always muscle test or pendel to find out the correct dosage, but here is what a website recommended:
To support cardiovascular: 2,000 FU a day, duration determined by monitoring
For Spike protein clearance: 2,000-4,000 FU a day for 60-90 days)
For long COVID protocol: 2,000-4,000 FU a day for 3-6 months
Most protocols use 2,000-4,000 FU.
"FU" stands for Fibrin Units. The standard for nattokinase manufacturing is a potency of 2,000 FU per capsule.
Most bottles recommend a safe usage on the label.

How to take:

- **Take on empty stomach 30-60 minutes before meals or if you have eaten, wait 2 or more hours. The enzyme is more active when food protein isn't competing for digestion.**
- **If you get some digestive upset, take with a small amount of food. This will reduce the benefit but still be worth using it.**
- **It is o.k. To take with most other nutritional supplements but take separately from calcium supplements. Can can be combined with omega 3's which also thin the blood.**
- **If you are fasting, Nattokinase doesn't break a fast, the enzyme dose is too small to trigger a metabolic response so it is safe to do intermittent fasting.**
- **Nattokinase stays in the body approx. 8-12 hr. so taking it twice a day will provide better support than once a day.**

THE FUTURE IS UNCERTAIN

So, at the time of this writing , digestive enzymes at still available in stores. But the government has indicated they want to get rid of all supplements eventually, so the question is, how can we replace enzyme supplements with foods if we need to?

First you need to know that all cooked food is devoid of enzymes. A good idea would be to have some raw food with each meal so you have available enzymes to help digest whatever you are eating. By the way, the food must be fresh and ripe. Secondly, you can learn what foods have enzymes for special applications and we are listing some information here in that regard.

There are several types of digestive enzymes that break down food for easier digestion::

Amylase breaks down carbs like starch into simple sugars
Lipase breaks down fats into fatty acids
Protease breaks down protein into peptides and amino acids.
Lactase (to digest dairy)
Maltase found in plants, bacteria, yeast and humans (catalyzes intovmaltose)
Sucrase (sucrase comes from sugar cane or beet syrup) are enzymes made in the small intestine along with lactase and maltase.

SUMMARY OF FOODS THAT CAN BE USED AS NATURAL DIGESTIVE ENZYMES:

PINEAPPLE. Probably the strongest enzyme. This is Bromelain enzyme. This breaks down the proteins eg. Meats. If you want to do a test, place a slice of raw fresh pineapple on a piece of steak for a

day in the refrigerator, and see what happens. Used commercially to tenderize meat.

PAPAYA, also called Papain. Similar to pineapple, a good digestive enzyme for proteins, often used for irritable bowel, constipation and bloating. Used commercially to tenderize meat.

MANGO. Contains amylase that helps break down carbohydrates. Must chew thoroughly.

HONEY, must be raw. It contains diastases, amylases, invertases, and proteases.

BANANAS contains amylase and glucosidase, good for carbs. Also good for gut health.

AVOCADOS contain lipase – breaks down fats.

KEFIR has lipase, protease and lactase. So breaks down fat, protein, lactose.

SAUERKRAUT (fermented cabbage) eat raw or unpasteurized. High temperatures may deactivate; its enzymes. Helps with gas, constipation, IBS, colitis, crohn's, diarrhea etc.

KIMCHI. Similar to sauerkraut, fermented vegetables. Helps with total blood cholesterol.

MISO. Fermented soybeans and has lactase, lipase, protease and amylase. Very high salt, but the bacteria in miso can help with digestive disorders.

KIWI. Contains protease, helps digest proteins, often used to tenderize meat.

GINGER. Has protease zingibain which digests proteins but this is not often used to tenderize meats like the other proteases, it has a short shelf life.

So, if enzymes are not available, or you just want to try the natural food way, include some mof these foods to correspond to the type of meal you are eating. Remember, cooked foods are dead foods (no enzymes).