



ZYMACTIVE® WITH SERRATIA PEPTIDASE

Anti-inflammatory

THE HEALING POWER OF PROTEOLYTIC ENZYMES

Proteolytic enzymes (or proteases) refer to the various enzymes that digest protein. These enzymes include the pancreatic proteases chymo-trypsin and trypsin, bromelain (pineapple enzyme), papain (papaya enzyme), fungal proteases, and *Serratia peptidase* (the “silkworm” 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, MD, 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 (Gonzalez).

WHAT CLINICAL RESEARCH HAS BEEN DONE WITH PROTEOLYTIC ENZYMES IN CANCER?

The clinical research that currently exists on proteolytic enzymes suggests significant benefits in the treatment of many forms of cancer (Leipner). 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 (Ambus). 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 appear 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 “autoim-

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mune 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 (Mazurow, Ransberger, Steffen, *et al.*).

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. For example, one potential use is in the treatment of viral related illness including hepatitis C and herpes simplex infections. For example, in one study in the treatment of herpes zoster (shingles), an orally administered proteolytic enzyme preparation was more effective than the standard drug therapy (acyclovir) (Kleine, *et al.*). 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 (Kabil). 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 (Esch, *et al.*, Kee, *et al.*, Mazzone, *et al.*, Majima, *et al.*).

THE MIRACLE ENZYME

Dr. Han's Nieper, a legendary medical doctor known for his extensive use of proteolytic enzymes, called serrapeptase the "miracle enzyme". Dr. Nieper used the enzyme primarily to open up clogged arteries supplying the brain. This enzyme is more powerful than the pancreatic enzymes chymotrypsin and trypsin. It has been used in Europe and Japan for over 25 years. 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 (Esch, *et al.*, Kee, *et al.*, Mazzone, *et al.*, Majima, *et al.*).

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 (Friess). However, my recommendation is 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; and papain should not be used in anyone sensitive to papaya.

KEY REFERENCES

- Ambrus J.L., *et al.*, "Absorption of exogenous and endogenous proteolytic enzymes", *Clin Therap*, 8: 362-8; 1967
- Esch P.M., Gemgross H., Fabian A., "Reduction of postoperative swelling. Objective measurement of swelling of the upper ankle joint in treatment with serrapeptase - a prospective study (German)", *Fortschr Med*, 107 (4): 67-8, 71-2; 1989
- Friess H., *et al.*, "Influence of high-dose pancreatic enzyme treatment on pancreatic function in healthy volunteers", *Int J Pancreatol*, 23: 115-23; 1998
- Gonzalez N.J., Isaacs L.L., "Evaluation of pancreatic proteolytic enzyme treatment of adenocarcinoma of the pancreas, with nutrition and detoxification support", *Nutr Cancer*, 33: 117-24; 1999
- Kabil S.M., Stauder G., "Oral enzyme therapy in hepatitis C patients", *Int J TISS React*, 19: 97-8; 1997
- Kee W.H., *et al.*, "The treatment of breast engorgement with Serrapeptase (Danzen): a randomized double-blind controlled trial", *Singapore Med J*, 30 (1): 48-54; 1989
- Kleine M.W., *et al.*, "The intestinal absorption of orally administered hydrolytic enzymes and their effects in the treatment of acute herpes zoster as compared with those of oral acyclovir therapy", *Phytomedicine*, 2: 7-15; 1995
- Leipne, J., Saller R., "Systemic enzyme therapy in oncology: effect and mode of action", *Drugs*, 59: 769-80; 2000
- Majima Y., *et al.*, "The effect of an orally administered proteolytic enzyme on the elasticity and viscosity of nasal mucus", *Arch Otorhinolaryngol*, 244 (6): 355-9; 1988

Mazurow V.L., *et al.*, "Beneficial effects of concomitant oral enzymes in the treatment of rheumatoid arthritis", *Int J TISS React*, 19: 91; 1997

Mazzone A., *et al.*, "Evaluation of Serratia peptidase in acute or chronic inflammation of otorhinolaryngology pathology: a multicentre, double-blind, randomized trial versus placebo", *J Int Med Res*, 18 (5): 379-88; 1990

Ransberger K., "Enzyme treatment of immune complex diseases", *Arthritis Rheuma*, 1986; 8: 16-9

Steffen C., *et al.*, "Enzyme therapy in comparison with immune complex determinations in chronic polyarteritis", *Rheumatologie*, 44: 51-6; 1985