

Balance pH, Boost Digestion, and Reduce Inflammation With the Pineapple Enzyme Bromelain

Bromelain consists of two enzymes that digest proteins, otherwise known as proteases or proteolytic enzymes. These enzymes are obtained from different parts of the plant, one from the stem and the other from the fruit. It also includes protease inhibitors, acid phosphatase, peroxidase and calcium.

First used as a supplement in 1959, bromelain is particularly popular in Germany, where a lot of the recent research has been carried out. Because the stem enzyme is in the greatest amount, eating pineapple will not give a great deal of bromelain, and you will have to take the supplement which is extracted from the stem in order to get the greatest benefits.

Bromelain has several therapeutic effects on the body, and is a good aid to digestion. The enzyme can boost the digestive processes and so reduce the incidence of problems such as heartburn, acid reflux and any other condition caused by the incomplete digestion of foods. It does this by breaking down proteins so they are more easily digested.

In fact its potency is sometimes measured in GDUs (Gelatin Digesting Units), gelatin being a common protein that is easily used for the measurement of bromelain activity. It is also measured in MCU (Milk Clotting Units), since bromelain can also be used to clot milk, and a standardized dose should contain 2 MCU per milligram. The dosage to use depends a great deal on the condition being treated, but a good general average for digestive problems is 500 mg three times daily.

Bromelain works best at an optimum pH of 4.5 – 5.5 and can therefore help to balance the pH in its environment. It is extremely important to the immune system that the pH of the body is balanced and controlled to within certain limits, and bromelain can help to achieve that. In helping to reduce the excessive acidity caused by poor digestion, a balanced pH of the stomach is also maintained, helping to reduce the feeling of nausea, common with some digestive defects. The overall result of bromelain supplement is to help to maintain a better digestive system and ease the discomfort of many people for whom a meal is frequently not the pleasure it should be.

Bromelain is also an anti-inflammatory, and used for temporary relief of the inflammation caused by surgical procedures, arthritis and various injuries and forms of disease. It is commonly used for the treatment of sports injuries and also immediately after surgery to reduce the risk of inflammation. It appears to have an inhibiting effect of the production of pro-inflammatory metabolites in the body, although the mechanism by which it works is not yet fully understood.

In fact many of the therapeutic benefits of bromelain have been shown to be only partially due to its proteolytic activity, and it is now believed that there are also as yet unidentified non-protein factors present in bromelain that contribute to these forms of health benefit. The biochemistry of bromelain has yet to be fully characterized.

Notwithstanding that, the substance has been recommended for the treatment of a wide range of connected conditions, such as gout, arthritis, hemorrhoids, ulcerative colitis, autoimmune disorders, hay fever and sinusitis. It is particularly useful where there is pain, where tissues have become swollen and when tissue repair is needed. It appears to inhibit pain-inducing prostaglandins and is also believed in some way to induce the biochemical production of other prostaglandins that have an anti-inflammatory effect.

All of this knowledge has come as a result of studies carried out on the biochemical activity of bromelain, but have not yet been proved and is indicative of the lack of biochemical knowledge on this substance and the chemicals it contains. What have been demonstrated, however, are its effects on platelets and blood clots in arteries.

It appears to do this by the inhibition of the formation of high levels of fibrinogen from which clots are made, and also inhibits the aggregation of blood platelets and their ability to stick to the endothelial cells of blood vessels, particularly the arteries. The fibrin that is produced from fibrinogen not only promotes blood clotting but is also associated with the retention of fluid. It is a protein, and the proteolytic effect of bromelain also breaks this down.

Bromelain therefore works in a number of ways to reduce fluid retention, prevent blood clotting and inhibit the aggregation of blood platelets on artery walls. The measurable effect of this is the thinning of the blood that such activity promotes. It is logical that if fibrin contributes to the viscosity of blood, then its destruction will result in thinner blood, and hence lower blood pressure.

It is also used in the treatment of burns, where it helps to remove the dead skin that can delay recovery after third degree burns. It also appears to promote the absorption of many antibiotics, which again helps in recovery.

Bromelain is relatively safe to use with few side effects, although, curiously, among the side effects are some conditions it is also used to treat. Among these are nausea and allergic reactions, along with diarrhea and excessive menstrual flow. One of its successes has been in the control of menstrual pain.

Bromelain has been proposed for cancer therapy, its potential use being recommended due to its effect of the adhesion of cells, its regulation of the immune function and its effect on the immunosuppressive cytokine TGF-beta that is involved in several types of cancer and their metastasis (spread to other parts of the body). However, a lot more work is needed on this for definite conclusions to be drawn.

On a more practical note, the effect of bromelain on proteins is put to use as a steak tenderizer. If the product is sprinkled in powdered form onto meat, and then forked into the tissue, the enzymes will break down the protein of the meat and make it tender when cooked. However, don't overdo it or you will end up eating a meaty mush more akin to a soft meatloaf than a good steak!

All in all, bromelain is a useful supplement for many medical conditions, and does to food in your stomach what it does to steak on the plate. It is generally used in supplement form because the active enzyme is not in a high enough concentration in the fruit itself, but in the stem from which it is extracted after the fruit has been harvested. It is also easier to standardize a supplement than a fruit.

About the Author

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