



Short Communication

PAPAIN ENZYME: A DIGESTIVE AID

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ABSTRACT

Digestion is a process in which food is divided into forms that our body can use in performing various functions. It has large organic molecules like fat, carbohydrate, proteins. It then breaks down into smaller parts like glucose, fatty acids and amino acids. The human body has a complete digestion system from mouth to anus. Digestive enzymes are diverse and found in the saliva secreted by the salivary gland, in the stomach secreted by cells lining the stomach and in the pancreatic juice secreted by pancreatic exocrine cells. But, there is a presence of this much enzyme in the body and most of the people are facing the problem of indigestion and stomach pain due to the eating habits. Irregular timing of eating, fast food consumption and other reasons create the problem of indigestion.

KEYWORDS

Papain, indigestion, pancreatic exocrine cell.

INTRODUCTION

We face many problems of indigestion and flatulence for which we consume papaya which is a natural solution. Papaya is very beneficial for human body because it provides numerous health benefits and it is used for medical purposes too. It is a good source of beta carotene, flavonoids, vitamin B, folates and vitamin C. Papaya is called as a natural digestive fruit. It is due to the enzyme present in papaya: papain. Papain is a proteolytic enzyme also called as protease or peptidase. Any group of enzymes breaks the long chain of protein into shorter fragments and eventually into their components amino acids.

Papain

Papain is a single chained polypeptide with three disulfide bridges and a sulfhydryl group necessary for the activity of the enzyme. Papain is expressed as an inactive precursor, prepropapain. The formation of active papain requires several cleavage steps^[1] including an initial cleavage of the 18 amino acid preregion followed by further cleavage of the glycosylated 114 amino acid proregion (Figure 1).

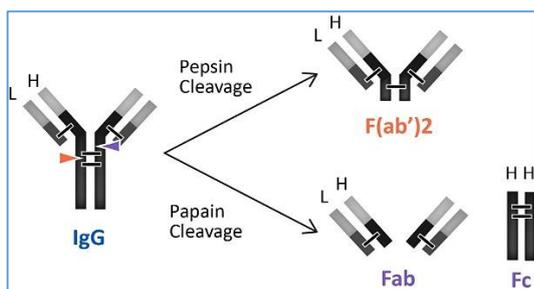


Figure 1. Papain Fragments

Benefits of papain:

- ✓ Papain is commonly used in cell isolation procedures where it has proven to be more efficient and less destructive than other proteases on certain tissues.
- ✓ It has been used for the isolation of smooth muscle cells. Papain was found to increase significantly the yield of viable smooth muscle cells. While not affecting cell sensitivity to stimulants.^[2]
- ✓ Papain is used in red cell serology to modify the red cell surface to enhance or destroy the reactivity of many red cell antigens as an adjunct to grouping, antibody screening or antibody identification procedures.
- ✓ Papain holds a compound that may aid in protecting the body from cellular damage caused by free radicals. It is a powerful agent due to its oxidation property.^[3]
- ✓ It is also useful in food preservation as it reduces bacterial infestations and spoilage due to oxidation. e.g. Meat tenderization.^[4]
- ✓ Papain has been used in traditional alternate medicine for its antiseptic and anti-inflammatory properties in treating bedsores, burns and skin ulcers and wounds.
- ✓ Papain should not be used on open wounds but it is used on dry and healed wounds to remove dead skin.^[5]
- ✓ According to the University of Maryland Medical Center, papain may help with the reduction of swelling in the prostate gland.

Papain is very beneficial for the prevention and treatment of asthma, ulcers, swelling, fever, sore throat, painful sensation, arthritis etc.^[6]

CONCLUSION

Papain the proteolytic enzyme have a property to breakdown the long chain of proteins into simpler form that will be useful in digestion. It is said that eating papaya after taking your meal is good. Green papaya have more papain than those that are fully riped. Bright orange papaya also contains more antioxidant and vitamins.

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