A Novel Method to Prevent Digestive Disorders: The Creation of an Enzymatic Catalysis Enhancer for Bromelain from Ananas comosus (Pineapple) for the Digestive Function of Casein, Ovalbumin, Glycine max (Soy) and Pisum sativum (Pea) Proteins

Martinez Tiru, Christopher

The enhancement of enzymatic catalysis for adequate digestion of accumulated proteins in the stomach is necessary for the prevention of dyspepsia, renal insufficiency, and further complications. The problem being addressed in this study was if bromelain from Ananas comosus can perform greater enzymatic catalysis by digesting animal and vegetable proteins at lower concentrations under the recommended dose of 1,500mg. The hypothesis was that bromelain from Ananas comosus causes greater enzymatic catalysis at lower concentrations than the recommended dose, because there will be more exposition of the active sites. Three levels of collagen samples were tested to determine the effectiveness of enzymatic catalysis under the recommended dose of bromelain. Bromelain at 66.7% was more effective for proteolytic interaction than papain. Two animal proteins (casein and ovalbumin) and two vegetable proteins (Glycine max and Pisum sativum), found in most consumed products, were tested. The Lowry Method was used to determine enzymatic activity measuring released tyrosine concentrations. This method determined the released tyrosine in the solutions of animal and vegetable proteins. A UV-Vis spectrophotometer measured the absorbance values from digested protein samples. Bromelain at 70% catalyzed ovalbumin, releasing 8.05micromoles of tyrosine; at 40% it catalyzed casein, releasing 3micromoles. Glycine max yielded 3.67micromoles and Pisum sativum yielded 4.47E-05moles, both at 90%. The above mentioned concentrations of bromelain were effective for high rate enzymatic catalysis. These findings provided a sustainable and cost-effective alternative in the reduction of the recommended dose due to a greater exposure of the enzyme’s active sites, therefore the hypothesis was accepted.