The Protease Inhibiting Effects of Almonds

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Some contemporary health coaches suggest that natural almonds contain protease inhibitors (substances that inhibit the activity of protein-digesting enzymes). They claim that by “activating” the almonds (soaking and heating them), the inhibitor will be removed, and thus, the almonds better for our digestion. Hence, the purpose of this research was to investigate the validity of this claim. The reaction whereby skim milk protein is catabolized by trypsin (a protease) was used to represent protein digestion in the human small intestine. This reaction was monitored colorimetrically over time to give an indication of the rate of reaction. Three conditions of the reaction were monitored: the control condition (skim milk untreated), the natural almond condition (skim milk exposed to natural almonds) and the activated almond condition (skim milk exposed to activated almonds). The results showed that the natural almond condition had a significantly slower maximum rate than the other two conditions. It was concluded that a protease inhibitor is present in natural almonds and this prompted the second phase of the experiment: to investigate the nature of inhibition occurring. A similar design was used to obtain the maximum rate of the control and natural almond condition reactions at different substrate (skim milk) concentrations. Theoretically, this information could be used to develop reaction profiles, and hence, classify the type of inhibition in natural almonds as competitive or non-competitive. However, the procedure was limited and a reliable conclusion was not able to be made.

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