

## **Effectiveness of Different Proteases in Reducing Raw Peanut Allergenicity**

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The purpose of this study was to evaluate the effectiveness of some proteases in reducing allergenic proteins in raw peanuts. Raw Virginia peanut kernels purchased from a North Carolina peanut producer were treated by four single proteases (Alcalase, bromelain, Neutrase and papain) at the optimal pH and temperature of each enzyme, respectively. The effectiveness of treatment was evaluated by quantifying the residues of three major peanut allergens, Ara h 1, Ara h 2 and Ara h 6, using a sandwich ELISA, and the percent reduction of each allergen was calculated in comparison to the untreated raw peanut sample. The allergens in the insoluble portion of peanuts were extracted using sample buffer containing reducing agent and visualized by SDS-PAGE. The allergenicity of both soluble and insoluble portions of peanuts were tested by Western Blot.

We found that all enzymes tested were effective in decomposing Ara h 1 but the effectiveness of these enzymes in reducing Ara h 2, and Ara h 6 varied greatly. The effectiveness of reducing Ara h 2 was in the order of Alcalase > Papain > Neutrase > Bromelain, while the effectiveness of reducing Ara h 6 was in the order of Alcalase > Papain > Bromelain > Neutrase. Alcalase treatment significantly reduced the allergenicity of peanuts, but other proteases were not. Ara h 6 was the most resistant allergens to the proteases tested in this study. More studies are needed to enhance the reduction of Ara h 6 and evaluate the allergenicity of raw peanuts treated by different proteases by both in vitro and in vivo methods.