Detection and stability of the major almond allergen in foods.

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Abstract:
Almond major protein (AMP or amandin), the primary storage protein in almonds, is the major allergen recognized by almond-allergic patients. A rabbit antibody-based inhibition ELISA assay for detecting and quantifying AMP in commercial foods has been developed, and this assay, in conjunction with Western blotting analyses, has been applied to the investigation of the antigenic stability of AMP to harsh food-processing conditions. The ELISA assay detects purified AMP at levels as low as 87 rt16 ng/mL and can detect almond at between 5 and 37 ppm in the tested foods. The assay was used to quantify AMP in aqueous extracts of various foods that were defatted and spiked with known amounts of purified AMP or almond flour. In addition, AMP was quantified in commercially prepared and processed almond-containing foods. Neither blanching, roasting, nor autoclaving of almonds markedly decreased the detectability of AMP in subsequent aqueous extracts of almonds. Western blots using both rabbit antisera and sera from human almond-alleregic patients confirm a general stability of &e various peptides that comprise this complex molecule and show that the rabbit antibody-based assay recognizes substantially the same set of peptides as does the IgE in sera from almond-allergic patients.