Effects of Roasting, Blanching, Autoclaving, and Microwave Heating on Antigenicity of Almond (Prunus dulcis L.) proteins.

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Abstract:
Whole, unprocessed Nonpareil almonds were subjected to a variety of heat processing methddsthat included roasting (280,300, and 320 °F for 20 and 30 min each: and 335 and 350 °F for 8, 10, and 12 min each), autoclaving (121 °C, 15 psi, for 5, 10, 15, 20, 25, and 30 min), blanching (100 °C for 1, 2, 3, 4, 5, and 10 min), and microwave heating (1, 2, and 3 min). Proteins were extracted from defaned almond flour in borate saline buffer, and immunoreactivity of the soluble proteins (normalized to 1 mg protein/mL for all samples) was determined using enzyme linked immunosotbent assay (ELISA). Antigenic stability of the almond major protein (amandin) in the heat-processed sampies was determined by competitive inhibition ELISA using rabbit polyclonal antibodies raised against amandin. Processed samples were also assessed for heat stability of total antigenic proteins by sandwich ELISA using goat and rabbit polyclonal antibodies raised against unprocessed Nonpareil almond total protein extract. ELISA assays and Westem blotting experiments that used both rabbit polyclonal antibodies and human IgE from pooled sera indicated antigenic stability of almond proteins when compared with that of the unprocessed counterpart.