Impact of γ-irradiation and thermal processing on the antigenicity of almond, cashew nut and walnut proteins.

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Abstract:
Whole unprocessed almonds, cashew nuts and walnuts were each subjected to g -irradiation (1, 5, 10 and 25 kGy) followed by heat processing including autoclaving (121ºC, 15 psi for 15 and 30 min), dry roasting (138 and 160ºC for 30 min each, 168 and 177ºC for 12 min each), blanching (100ºC for 5 and 10 min), oil roasting (191ºC, 1 min) and microwave heating (500W for 1 and 3 min). Rabbit polyclonal antibodies were raised against each major protein isolated from defatted, but not subjected to g -irradiation and/or any thermal processing, almond, cashew nut and walnut flours. Immuno-reactivity of almond, cashew nut and walnut proteins soluble in borate saline buffer, normalised to 1 mg protein ml -1 for all samples, was determined by inhibition enzyme-linked immunosorbent assay (ELISA) and Western blotting. ELISAs and Western blotting experiments indicated that almond, cashew nut and walnut proteins exposed to g -irradiation alone or followed by various thermal treatments remained antigenically stable.