

**Title** Nutritional quality evaluation of electron beam-irradiated lotus (*Nelumbo nucifera*) seeds  
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### **Abstract**

Nutritional and antinutritional qualities, and functional properties of raw and electron beam-irradiated (doses: 0, 2.5, 5, 7.5, 10, 15 and 30 kGy) lotus seeds were studied. Seeds were rich in protein, amino acids, unsaturated fatty acids and minerals, without heavy metal contamination. Irradiation of seeds revealed a decrease in crude protein and fibre, which was not significant at any of the doses. However, significant increase of ash (10 kGy onwards) and carbohydrates (at 30 kGy) were recorded after irradiation. Seed flours showed a significant dose-dependent decrease in water absorption capacity, while oil absorption capacity significantly increased from 10 kGy onwards ( $p < 0.05$ ). Also, significant increase in protein solubility (5 kGy onwards) and foaming capacity (7.5 kGy onwards) with improvement in the least gelation capacity (5 kGy onwards) of seed flour ( $p < 0.05$ ) was recorded after irradiation. Electron beam irradiation of seeds resulted in significant dose-dependent elevation of total phenolics and tannins, while phytic acid was eliminated at 5 kGy. Seeds of lotus can serve as food and minimise protein-energy malnutrition of economically weaker sections of the population in developing countries. The seed flours also possess great potential for development of new food products and formulations. As a physical method of preservation, electron beam irradiation was effective in the retention of the nutritional qualities of lotus seeds and is recommended for commercial exploitation.