

Control of post-harvest storage losses in water chestnut (*Trapa bispinosa* Roxburg) fruits by natural functional herbal coating and gamma radiation processing

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Abstract

Water chestnut (*Trapa bispinosa* Roxburg) has short shelf life even after drying due to insect infestations resulting in huge economic losses to farmers. Study was performed including coating with Aloe-vera gel, air drying, LDPE packaging and gamma irradiation (≤ 1 kGy) were evaluated for their efficacy in controlling storage losses. The study was performed with complete randomized design up to 6-month storage period. Physico-chemical properties analysis indicated, weight loss (0.11–0.88%), damage (upto 6.5%) and lesser grain borer infestation (up to 16 no. per packet) during storage at different intervals. Moisture content ranged (9.25–10.10%), protein (8.82–8.89%), fat (0.90–1.00%), carbohydrate (76.83–76.89%), total ash (3.11–4.18%), total sugar (5.83–5.89%), reducing sugar (1.84–1.88%), non-reducing sugar (3.98–4.02%), amylose (66.54–66.64%), in-vitro starch digestibility (3.14–3.18%), phenolics (0.14–0.18%), acidity (0.11–0.12%) and ascorbic acid (41.66–50.00 mg/100 g). These treatments were not found to affect the quality attributes significantly however; it helps in controlling insect infestations at ambient condition. The sensory score of the product, ‘Sev’ was ranked as like slightly to moderately range. It could be concluded that water chestnut with combinations of 50% aloe-vera gel +0.75 kGy gamma radiation treatment could be stored up to 6 months with retention of quality attributes.