

Impact of Gamma Irradiation on Control of Microorganisms in Export Oriented Moringa (*Moringa oleifera*) Powder and Flakes

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Moringa (*Moringa oleifera*) has a growing demand in export market mainly due to its health benefits. The study was carried out to evaluate the effect of different gamma irradiation doses to physical parameters and microbial quality of export oriented Moringa powder and flakes in Sri Lanka. Homogenized Moringa samples were collected from a particular exporter. Samples were irradiated at doses of 0 kGy, 2 kGy, 4 kGy, 6 kGy, 8 kGy and 10 kGy by industrial Co-60 gamma irradiator at dose rate 5.3 Gy min⁻¹. Under physical parameters, water activity, moisture content, color and infusion color (ΔE value based on L*, a*, b* in Hunter color scale) were measured for each of the treatment. Under microbial safety, total plate count, yeast and mold count and coliform counts were done. All treatments were replicated in three times. Average moisture content of irradiated Moringa powder and flakes were 6.32±0.04% and 6.09±0.03% respectively. Average water activity of irradiated Moringa powder was 0.41±0.00 and irradiated Moringa flakes was 0.44±0.03. Mean values of color and infusion color of irradiated Moringa powder and flakes were not significantly different (P<0.05) with the control sample. The average total plate count in control sample of powder was 1.29×10⁷±2.47×10⁵ CFU g⁻¹ and flake was 4.5×10⁵±3.71×10⁵ CFU g⁻¹, both irradiated Moringa samples showed significant reduction in dose dependent manner. No Yeast and Mold counts were observed in all the treated samples. *Escherichia coli* were identified in 0 kGy and 2 kGy samples only. It is concluded that the 6 KGy was better for Moringa flake and 8 kGy was better for Moringa powder for microbial safety, while preserving the physical quality.

Keywords: Moringa, Gamma irradiation, Dose, Microbial safety, Quality changes