

**EFFECT OF GAMMA IRRADIATION ON
PHYSICOCHEMICAL AND MICROBIOLOGICAL
PROPERTIES OF CEYLON BLACK PEPPER
(*Piper nigrum L.*)**

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ABSTRACT

Ceylon black pepper (*Piper nigrum* L.), commonly known as the “King of Spices”, has dominated the international spice market due to its high piperine content, strong aroma and rich flavor. Ceylon black is highly susceptible to contamination with different type of microorganisms. This study focused on evaluating the effects of different dose of gamma irradiation on physicochemical and microbiological properties of Ceylon black pepper. Samples were collected from an exporter. The collected samples were irradiated at five different doses (0, 5, 10, 20 and 30 kGy) by using an industrial Co-60 gamma irradiator. Treated samples were analyzed for water activity (a_w), moisture content, antioxidant activity, total polyphenol content, flavonoid content and volatile content, total plate count and yeast and mold counts of these samples were enumerated. This experiment was repeated thrice.

Irradiation dose did not affect significantly on the tested physicochemical properties of Ceylon black pepper.

All irradiation doses were capable of reducing total plate count and yeast and mold counts significantly ($p < 0.00$) as compared to the control. Therefore, it can be concluded that irradiation dose of 5 kGy can be applied to ensure microbial quality of Ceylon black pepper without affecting its physicochemical properties.

Key words: Ceylon black pepper, Gamma irradiation, Dose, Microbial safety