

**CHEMICAL, ORGANOLEPTIC AND MICROBIOLOGICAL EVALUATION OF
 IRRADIATED CUMIN SEEDS
 BY**

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ABSTRACT

The purpose of this study is to improve the quality of cumin seeds increase the storage period by using gamma irradiation. Irradiated cumin seeds with different doses of gamma rays (5.0, 8.0 and 10.0 kGy) and storage for six months were carried out in order to improve its quality. The effectiveness of different gamma irradiation doses (without pesticides) on the inhibition of bacteria, fungi and yeasts contaminating cumin seeds were carried out. Also, evaluation the major chemical composition, and sensory properties for irradiated cumin seeds were achieved. Identification the optimum irradiation dose for microbial decontamination without affecting spices properties was studied.

The obtained data indicated that irradiation doses at 5.0, 8.0 and 10.0 kGy had no significant effects on the chemical constituents of cumin seeds i.e. crude protein and total lipids. But, they were sufficiently decrease *Enterobacteriaceae* and total bacterial count and completely inhibited the fungal flora.

Statistical analysis of data showed that irradiation had no significant effect on sensory properties of cumin seeds.

INTRODUCTION

Spices are an important group of agricultural commodities. It can be used in various forms such as ripe, fresh, dried and powdered. Spices and herbs are widely used in most food preparation such as meat or meat products; fish or fish products; bakery products; pizza and other food stuffs (Rtnictchell, 2003).

Spices whole, ground, powdered are known to be highly contaminated with microorganisms. The majority of microbial flora of spices consists of aerobic sporeforming bacteria, heat resistant bacteria and mold spores. The total counts may be reach to 10⁷-10⁸ cfu/g. When contaminated spices added to foods that support out growth of the microflora, then microflora can shorten market life of the products through spoilage and/or

conceivably contribute to consumer illness (Munasiri *et al.*, 1987).

Spices after harvesting are often sundried by spreading them on open field or tarfelt road and then sold without any treatment in order to reduce the microbial load as reported by Andress *et al.* (2001) and Fennell *et al.* (2004).

Subbulakshmi *et al.* (1991) found that cumin seeds exposed to an absorbed dose of 10 kGy of gamma irradiation had no significant differentiation in their sensory qualities as compared with unirradiated samples.

Emam (2001) found that, the chemical constituents of cumin seeds (*Cuminum*