

Introduction

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Fungi play an important role in our life. They are agents responsible for much of the degradation process of organic materials, however, they affect us directly by including various human diseases and deteriorating food materials.

Fungi are both destructive and beneficial to agriculture, they share bacteria and other microorganisms in the increase of soil fertility through their participation in either breaking down organic matter or converting organic material into simple soluble product, that can be easily absorbed by roots of higher plants.

Moreover, fungi are the basis of a number of industrial processes including bread, wine, beer, cheese in addition to vitamins preparation and antibiotic manufacture. However, their role in the process of plant disease development, remain the most important.

Fungi can easily contaminate raw food material both during their growing period and after harvest. Oil seeds and grains, are subjected to invade or attack by many fungi upon storage. Some of these fungi have undesirable effect on the quality of seeds and oil. Others are capable to produce secondary metabolites, known as mycotoxins, that are both toxic and carcinogenic to man and animals, causing possible food and feed hazards.

Infection and contamination by fungi can be prevented by proper handling, low moisture content in the seeds, environmental control of the stores, surface disinfestations by direct chemical treatments and fumigation. Environmental control in the stores through lowering storage temperature, aeration, lowering humidities ..etc. is energy consuming and expensive. Health hazards associated with residues limit extensive application of the chemicals and pesticides.

Ionizing radiation, as a physical cold process, has now been internationally accepted and recognized as a safe and effective method to preserve various types of foods by partial elimination of spoilage microorganisms, ensure hygienic quality through elimination of pathogenic microorganisms, control fungal infection and control insect infestation. The effectiveness of the treatment is dependent on several factors including the composition of the foods, the number and type of microorganisms and the dose of irradiation . . . etc.

It's efficiency and advantage resulted from power penetrate into the product and destroy spoilage and pathogenic microorganisms without arising the treated product temperature, hence keep its freshness.

Fungi as bacteria and yeasts, differ greatly in their resistance to radiation. In other words radiation resistance of fungi differs with the genus and with species in the same genus and even with strains in the species.

The main objectives of the present study were:

- 1- Isolation and identification of radiation-resistant fungi (*Curvularia* spp., *Alternaria* spp. and *Fusarium* spp.) from their natural products particularly foods, feeds, soil,etc.
- 2- Determine the "radiation decimal reduction dose" (D_{10} -value) of fungal spores to know the sensitivity or resistance of these molds to irradiation.
- 3- Examine the role of cellular composition (total proteins, amino acids, total lipids, fatty acids, DNA and RNA content) in the radiation-resistance.
- 4- Prevention of mold growth contaminating the food by using irradiation.