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التوثيق الالكتروني والميكروفيلم

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EFFECT OF SOME SEED SPROUTING USING SALINE WATER ON SPROUT QUALITY DURING STORABILITY AFTER TREATED BY RADIATION

By

EMAD ASHOUR TOUKHY HEGAB
BSC. Agric. sc. (Desert Land Reclamation and Cultivation. Cairo University, 2010

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ABSTRACT

Emad Ashour Toukhy Hegab: Effect of some Seed Sprouting Using Saline Water on Sprout Quality During Storability After Treated By Radiation. Unpublished M.Sc. Thesis, Arid Land Agricultural Graduated Studies and Research Institute, Faculty of Agriculture, Ain Shams University, 2021.

In this study, clover seeds were germinated with four treatments. T1 (ST) (Dipping in 20g/L Calcium hypochlorite for 20 min. +Washing with NaCL then, soaking in 2000 ppm NaCl, 12 hr. / 3 days), T2 (ST) (Dipping in Calcium hypochlorite for 20 min. then, washing tap water, 12 hr. / 3 days), T3 (NST) (Dipping in tap water + Washing by NaCL, 12 hr. / 3 days) and T4 (NST) (Dipping in tap water + washing by tap water, 12 hr. / 3 days).

Clover sprouts was treated with gamma radiation, a no thermal food process, to reduce microbial load and forborne pathogens and to increase shelf life. After irradiation at dose of 2 kGy, the total bacterial count decreased from $5.0x10^7$ to $6.0x10^3$cfu/g, and the total coliform counts decreased from >1100 to <3 cfu/g *E. coli* count from $2.9x10^2$ to < 3 and *Staphylococcus aureus* count went down from $4.5x10^4$ to <100 cfu/g.

These results showed clover seeds germinated in sterilized tap water and irradiated at 2 kGy improved microbial safety of clover sprouts without affecting germination, chemical and quality during storage was extended to 15 day. Irradiated sprouts had similar overall acceptability quality as the non-irradiated one.

Combination treatment including sterilized (Hypo +NaCl , Hypo + H_2O) and non-sterilized (NaCl, H_2O) and gamma irradiation (after germination and packaging for storage) was developed which ensured the microbial safety of sprouts and extended the shelf life up to 12 days for

fenugreek sprouts at 9±1°C. Fenugreek sprouts irradiated with 2 and 3 kGy were free of *Staph. aureus* throughout their 12 day of storage.

At day 12 of storage, the overall appearance scores of unirradiatedfaba bean sprout decreased from 9.0 at zero time to (range 2-4.5) in all treatments indicating that these samples were sensorially rejected.

The shelf- life of the faba bean sprouts irradiated to 2 kGy was extended. The overall acceptability scores decreased from 9.0 to 8.1 and 7.8, in treatment 1,3 (Hypo +NaCl and NaCl), respectively. At day 12 indicating that sterilized samples were sensorially accepted.

A combination process was optimized which extended the shelf life up to 21 days for clove, 12 day for fenugreek and 14 days for bean sprouts at 9±1°C storage without affecting the wholesomeness. The combination process ensured microbiological safety. However, irradiation of the sprouts is promising. The irradiation process would not only decrease human pathogens on the sprouts, but also increase keeping quality.

Key words : Clover sprouts, Fenugreek sprouts, Faba bean sprout, Germination, Combination treatments, Gamma, Irradiation, Quality, shelf life and Pathogenic microorganisms.

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