Title Effect of γ-irradiation on pathogens inoculated into ready-to-use vegetables

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Abstract

Three ready-to-use vegetables, cucumber, blanched and seasoned spinach, and seasoned burdock were selected and the effects of an irradiation treatment for eliminating pathogens were investigated. The pathogens tested were *Salmonella* Typhimurium, *Escherichia coli*, *Staphylococcus aureus*, and *Listeria ivanovii*. Inoculated viable cells of *S.* Typhimurium and *L. ivanovii* into cucumber and blanched and seasoned spinach were reduced about 4 decimal points by 2 kGy of irradiation and that of *S. aureus* inoculated into burdock showed about 4-decimal point reduction by 1 kGy. *E. coli* inoculated into burdock was not detected by 1 kGy. All the bacterial contents of test pathogens into the samples were reduced to below the limit of detection by 3 kGy irradiation. The range of the D_{10} value was 0.28–0.42 among the four pathogens. A *Salmonella* mutagenicity assay (Ames test) indicated that the 10 kGy-irradiated ready-to-use vegetables did not cause any increase. The studies indicated that a low-dose irradiation (3 kGy or less) can improve the microbial safety of ready-to-use vegetables.