

Title Microbial quality assessment and pathogen inactivation by electron beam and gamma irradiation of commercial seed sprouts

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Abstract

The microbiological quality of fresh sprouts and their seeds and the potential use of electron beam and gamma irradiation in inactivating inoculated pathogens in both samples were evaluated. High levels of aerobic bacteria and coliforms were enumerated in sprouts. Red radish, alfalfa and broccoli sprouts were positive for *Listeria monocytogenes*, while all seed samples were negative for pathogens. Red radish and broccoli sprouts and their seeds were inoculated with *Escherichia coli* O157:H7, *Salmonella typhimurium*, *L. monocytogenes* and *Bacillus cereus* and irradiated up to 3.0 kGy. The D_{10} values of the inoculated pathogens were lower in both broccoli and red radish samples treated with gamma ray than with electron beam, while the D_{10} values obtained in seeds were relatively higher compared with sprouts. This study demonstrated the poor microbiological quality of commercial sprout and the potential health risk it poses. Irradiation at appropriate doses is a promising approach for producing safe and pathogen-free sprouts for consumers.