

Title	New developments in the irradiation of fresh-cut fruits and vegetables
Author	A. Prakash
Citation	Book of Abstracts, 2004 IFT (Institute of Food Technologists) Annual Meeting and Food Expo, 13-16 July 2004, Las Vegas, Nevada, USA. 321 pages.
Keyword	fresh-cut fruit; fresh-cut vegetable; irradiation

Abstract

This paper will discuss the effects of irradiation on quality and safety of various fresh-cut vegetables. Irradiation can serve as a hurdle in a combination approach to enhance safety while preserving quality of fresh-cut fruits and vegetables. Significant extension of shelf-life can be achieved, especially for those products where shelf-life is limited by microbial spoilage. Irradiation is one of few technologies that will allow destruction of pathogens embedded within a product that surface decontamination methods cannot address. The dose levels required for pathogen elimination are usually quite low and the challenge is to increase the range of dose levels that can be used for a specific product for maximizing pathogen destruction and minimizing undesirable quality changes. Some fruits and vegetables when irradiated exhibit responses similar to those observed in wounded or stressed tissues, in others these effects are not observed. Depending on the dose level, responses may include transient changes in respiration rate and ethylene production. Other physical and chemical reactions such as enzymatic activities, loss of cellular integrity and enhanced moisture loss may lead to reduction in quality. Combining irradiation with other technologies such as calcium treatment, warm water dips, and modified atmosphere packaging can further enhance shelf-life and mitigate adverse effects on quality. While irradiation is not suitable for all fresh-cut produce, for certain products such as cut celery, green onions, cut cilantro, and sliced mushrooms, it offers significant benefits by improving safety as well as shelf-life.