




Effects of gamma radiation, individually and in combination with bioactive agents, on microbiological and physicochemical properties of ground beef

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Highlights

- Ground beef was treated by gamma irradiation and bioactive agents (BA).
- BA consists of cinnamaldehyde, ascorbic acid, and sodium pyrophosphate decahydrate.
- Gamma irradiation at 2 kGy reduced microbial contamination of ground beef.
- Irradiation plus bioactive agents treatment had better antimicrobial activity.
- Combined treatment did not affect physical and chemical properties of ground beef.