

**Title** Effect of integrated application of gamma irradiation and modified atmosphere packaging on physicochemical and microbiological properties of shiitake mushroom (*Lentinus edodes*)

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#### **Abstract**

Shiitake (*Lentinula edodes*) mushrooms were packed in biorientated polypropylene (BOPP) bags and exposed to different doses of gamma irradiation (1.0, 1.5, and 2.0 kGy) within the packaging, heat sealed and stored at 4 °C for 20 d. Of the three doses, 1.0 kGy was most effective in maintaining a high level of firmness. Samples treated with 1.0 kGy also exhibited smaller initial declines in soluble protein, higher increases in total sugar content and lower levels of malondialdehyde accumulation. Furthermore, 1.0 kGy promoted the accumulation of phenolics compound and showed higher antioxidant ability during storage. At higher doses, 2.0 kGy resulted in a higher microbial reduction, but showed negative effects on texture, chemical properties and functional components. All the gamma irradiation were effective in retarding mushroom sensory deterioration. Thus, application of gamma irradiation in combination with MAP can extend the storage life of shiitake mushroom up to 20 d.