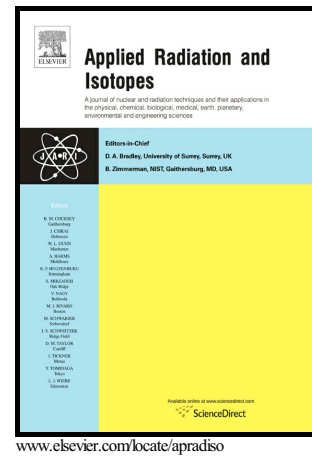


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# Effects of gamma irradiation on aflatoxin B<sub>1</sub> levels in soybean and on the properties of soybean and soybean oil

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## Abstract

Fungal infection is inevitable in the cultivation and storage process of soybean. Gamma irradiation is an effective method to control fungal growth and inactivate mycotoxins. The effects of gamma irradiation and fungal damage on the number of fungi, aflatoxin B<sub>1</sub> content, proximate composition of soybeans, and quality of soybean oil (acid value, peroxide value, iodine value, fatty acid profile, tocopherols content, and oxidation stability) were investigated in this work. Growth of fungi caused some changes in proximate composition of soybean and qualities of soybean oil. However, the changes depended on the damage extent of soybeans. No significant change was found for the soybeans incubated for 30 days (moderately fungi-damaged). Gamma irradiation could completely eliminate the fungi and greatly reduce the content of aflatoxin B<sub>1</sub> in soybeans at 10 kGy. For soybeans incubated for 30 days, there were no significant changes in the quality attributes, tocopherols content and oxidation stability of oil when the gamma irradiation dose was less than 20 kGy. Gamma irradiation is a promising method to improve the safety and economy of moderately fungi-damaged soybean used for feedstuff.

**Keywords:** Gamma irradiation; Fungal damage; Aflatoxin B<sub>1</sub>, Soybean oil; Properties; Tocopherols

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