

Effect of gamma irradiation on physicochemical properties and microbiological quality of yellow noodle with addition of rice bran

ABSTRACT

Irradiation is principally used as preservation to improve food shelf-life. The effect of gamma irradiation on physicochemical properties and microbiological quality of yellow noodles with addition of rice bran were observed. Wheat flour was replaced with rice bran at different levels (5%, 10%, 15%, 20%). The rice bran yellow (RBY) noodles were exposed to different irradiation doses (4 kGy, 6 kGy 8 kGy) using Cobalt-60. Gamma irradiation significantly decreased the pH, moisture content, hardness, lightness and redness; whereas significantly increased the breaking length of RBY noodles. Total plate count of RBY noodles stored at 8°C was observed on day 0, 3, 5 and 7. No bacterial growth was observed at dose 6 kGy and 8 kGy on day 5 and 7. Micrograph of RBY noodles under SEM at 500x magnification showed that different gamma irradiation dose and replacement of rice bran resulted in small changes on starch granules. Additionally, increment of rice bran showed significant increase in moisture content, breaking length, redness, cooking yield and cooking loss; but significantly decreased the water activity at high dose, hardness, lightness and yellowness. In conclusion, irradiation positively impacted the microbiological quality and incorporation of rice bran gave positive effect on the cooking yield.

Keyword: Gamma irradiation; Rice bran; Physicochemical properties