

## Abstract

Chitosan was irradiated with gamma ray with the following doses: 10, 30, 50, 70 and 90 kGy. Characteristics of irradiated chitosan were analyzed for its functional groups using FTIR technique. Results indicated that there was no change in the main structure of irradiated chitosan. Chitosan solutions for coating peanut were prepared by dissolving chitosan powder in 2 % (v/v) acetic acid to obtain chitosan concentrations of 1, 2, 5 and 10 % (w/v). The pH of the solutions were adjusted to 5.6 using 6 M NaOH. Peanuts were dipped into chitosan solutions, brought up and placed in containers waiting for *Aspergillus* to become visible. Results revealed that for all chitosan concentrations and molecular weight studied, *Aspergillus* was significantly inhibited, as the fungi became visible in about 15 days on average for the control set without any coating. However, *Aspergillus* wasn't become visible for the chitosan-coated peanuts until at least 22 days on average. Peanuts coated with chitosan irradiated at 50 kGy and at 5% concentration exhibited the best anti-*Aspergillus* ability compared to other concentrations and irradiation doses (including non-irradiated chitosan), as the fungi wasn't become visible for at least 32 days on average, or about 2 times that of uncoated peanuts. When tested at 30 - 40°C and 70 - 90% relative humidity using peanuts coated with chitosan irradiated at 50 kGy and 5% concentration, it was found that the higher the relative humidity, the faster the *Aspergillus* became visible. At 30°C and about 90% relative humidity, the fungi became visible in 5 days. Therefore, besides appropriately coating peanuts with chitosan, low humidity is also very important in preventing *Aspergillus*.