B-57 : EFFECT OF GAMMA IRRADIATION ON MICRO-ORGANISMS, ESSENTIAL OIL CONTENT AND VOLATILE OIL COMPONENTS OF SPICES

R S Wilson Wijeratnam, D Sivakumar, Anoma Ratnayake**
Ceylon Institute of Scientific & Industrial Research, Colombo,
**Atomic Energy Authority, Colombo.*

Present microbial contamination observed in export quality spices lies between 10^7-10^8/g. Sri Lankan spices could fetch better prices in export markets if this contamination is reduced to internationally acceptable levels. Therefore introducing gamma irradiation technology to Sri Lanka will be beneficial to improve the quality of spices.

The changes in initial infestation and subsequent reinfestation after irradiation and storage were observed for 3 months and 6 months respectively. Irradiation at a dose upto 7.5KGY reduced the bacterial load of pepper from 10^7/g to 10^2/g with D value = 1.40. The original infestation of fungi was relatively low and could be reduced to 10^2/g at 5KGY. Irradiated samples did not show any variation with regard to microbial counts after 3 months and 6 months storage respectively. The reduction in microbial level was maintained by the 0.17mm gauge polyethylene bags used in the study. Spread plate method was adopted to measure microbial counts. *Bacillus sp* were the predominant bacteria, while *Aspergillus sp* and *Penicillium sp* were observed to be the major fungal contaminants in this commodity. The essential oil contents and volatile oil components of cardamom and nutmeg, which had been irradiated with 5KGY, 7.5KGY, and 10KGY did not show any significant variation, when compared with untreated spices 24 hrs after irradiation. Steam distillation and Gas-liquid chromatography were carried out for this purpose.