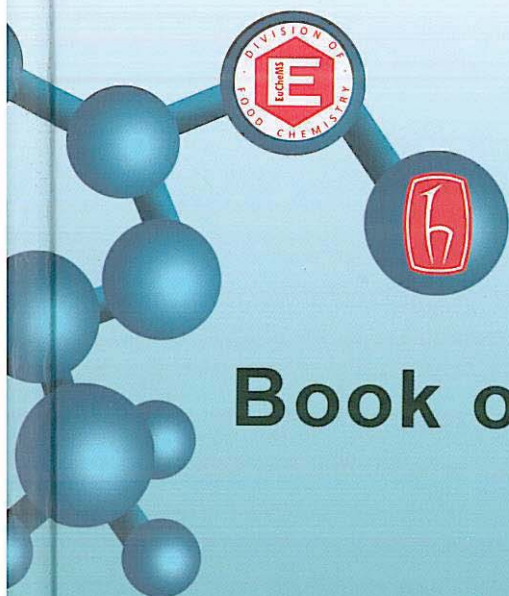


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EFFECTS OF GAMMA RADIATION ON CHEMICAL COMPOSITION OF PROCESSED SAMPLES OF THE WILD MUSHROOM MACROLEPIOTA PROCERA

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Mushrooms are rapidly perishable and they start deteriorating within a day after harvest. Therefore, fresh mushrooms have to be processed to extend their shelf life for off-season use. Among the various methods employed for preservation, freezing and drying are the most used technologies, but food irradiation has also been suggested by many investigators as a very promising technique for storage. In the present work, gamma radiation effects on *Macrolepiota procera* processed samples were evaluated, comparing the chemical composition of irradiated fresh, frozen and dried mushrooms. Fruiting bodies were obtained in Trás-os-Montes, in the Northeast of Portugal, in November 2011. The samples were submitted to the following processing technologies: freezing (at -20 °C in a freezer) and drying (at 30 °C in an oven). Fresh, frozen and dried samples were submitted to gamma irradiation, performed in experimental equipment with four Co-60 sources, at 0.5 and 1 kGy. Proximate composition was evaluated by official procedures, fatty acids were analysed by gas-chromatography coupled to flame ionization detection (GC-FID), while sugars and tocopherols were determined by high performance liquid chromatography (HPLC) coupled to refraction index (RI) and fluorescence detectors, respectively. A linear discriminant analysis revealed that chemical profiles obtained for each processing technology showed higher accuracy in defining the individual clusters corresponding to the naturally occurring groups, indicating that the tested gamma irradiation dose caused weaker changes in the samples. *M. procera* gamma irradiation attenuated the effects caused by oven-drying or freezing; for example, combining the freeze treatment with a 0.5 kGy dose preserved the amount of total tocopherols. Therefore, rather than a conservation methodology per se, gamma irradiation might act as a useful adjuvant to other conservation techniques such as freezing or oven-drying.

Keywords: Wild mushroom; *Macrolepiota procera*; Gamma irradiation; Processed samples; Chemical parameters.

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