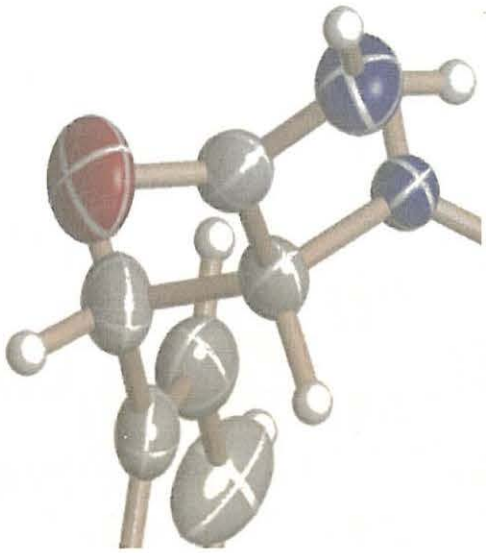

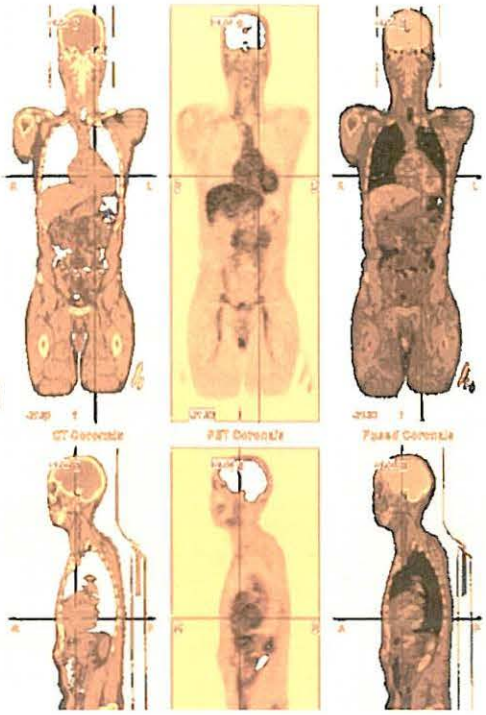

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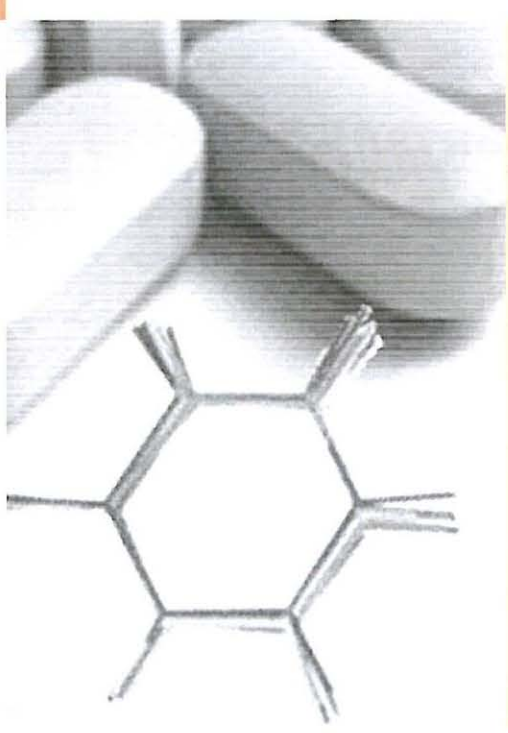

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Gamma irradiation preserves palmitoleic acid, a bioactive omega-7 unsaturated fatty acid, in *Macrolepiota procera* fresh samples

Ângela Fernandes[a,b], Amilcar L. Antonio[a,c,d], M. Beatriz P.P. Oliveira[b], Anabela Martins[a], Isabel C.F.R. Ferreira[a,*]

[a]*Centro de Investigação da Montanha (CIMO), ESA, Instituto Politécnico de Bragança, Portugal*
[b]*REQUIMTE/ Depto. de Ciências Químicas, Faculdade de Farmácia, Universidade do Porto, Portugal.*
[c]*IST/ITN, Instituto Tecnológico e Nuclear, Portugal.*
[d]*Departamento de Física Fundamental, Universidade de Salamanca,* Spain.
**iferreira@ipb.pt*

Obesity is a growing problem around the world, representing a metabolic disorder that is associated with many severe lifestyles related diseases including cardiovascular disease, diabetes, hypertension, hyperlipidemia, and hyperuricemia [1]. Omega-7 palmitoleic acid is a natural component found mainly in vegetables, nuts, and seeds. Studies have demonstrated that monounsaturated fatty acids suppressed appetite and short-term food intake in overweight subjects [1]. In particular, palmitoleic acid (or a diet rich in palmitoleic acid) may favorably influence glucose and lipid metabolism [2].

Wild mushrooms are excellent to be included in low caloric diets, presenting higher levels of unsaturated fatty acids than saturated ones [3]. Nevertheless, mushrooms are perishable and have to be processed for extended shelf-life; gamma irradiation has been applied to extend the postharvest of fresh mushrooms, alternatively to freezing or drying [4]. In the present work, freezing and oven-drying were selected and applied separately and combined with gamma irradiation to *Macrolepiota procera* wild samples, in order to evaluate the effects on the content and profile of fatty acids.

After collection (Bragança, Northeastern Portugal), fresh (kept at 4ºC), frozen (kept at -20ºC in a freezer) and dried (at 30 ºC in an oven) fruiting bodies were submitted to gamma irradiation, performed in experimental equipment with four ^{60}Co sources, at 0.5 and 1 kGy.Fatty acids were analyzed by gas-chromatography coupled to flame ionization detection (GC-FID).

For instance, myristic acid, palmitoleic acid and araquidic acid were lower in samples submitted to freeze conservation. Palmitoleic acid is a good example of the interaction among processing technologies and gamma irradiation doses; the 0.5 kGy dose minimized the amount of palmitoleic acid when combined with freeze treatment, but the same dose maximized the amount of palmitoleic acid in fresh samples.Gamma irradiation was the processing technology with the highest capacity to retain the fatty acids profile presented by fresh samples, indicating its high potential to be developed as an alternative conservation methodology.

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