



The First North and East
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NEEFood - 2012

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Book of Abstracts



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RUSFoST

St. Petersburg State
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The short shelf-life of mushrooms (1-3 days at ambient temperature) is an impediment to the distribution and marketing of the fresh product. Despite of the immense popularity of this food all over the world data regarding alternative technologies to increase mushrooms shelf-life are scarce. Treatment by irradiation emerges as a possible conservation technique that has been tested successfully in several food products and is regulated in the European Union by the Directive 1999/2/EC. Herein, the influence of gamma irradiation dose (0.5 and 1 kGy) over the fatty acids profile of *Lactarius deliciosus* L. wild mushroom, collected in the Northeast of Portugal (November 2011), was evaluated by gas-chromatography coupled to flame ionization detection (GC-FID). The analyses were performed after 0 (control), 4 and 8 days of storage at 4 °C. The control and the irradiated samples revealed an identical profile, with C18:0 (stearic acid), C18:2n6c (linoleic acid), C18:1n9c (oleic acid) and C16:0 (palmitic acid) as the main fatty acids. These results are in agreement to the reported by our research group in a previous study with nutritional characterization of this species [1]. Nevertheless, some differences were found in the percentage of some fatty acids in the different samples. For instance, control sample (non-irradiated) after 8 days of storage, showed a lower C18:1n9 percentage (decreased from 8 to 4.4%) contributing to a decrease in MUFA levels. Otherwise, in the sample irradiated with 0.5 kGy the percentage of the mentioned fatty acid did not changed until day 8. Overall, irradiation could be an alternative to ensure the quality and extend the life of mushrooms, protecting their fatty acids composition.

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References: [1] L. Barros, P. Baptista, D.M. Correia, J.S. Morais, I.C.F.R. Ferreira (2007) *J. Agric. Food Chem.* 55, 4781-4788.

ANTIOXIDANT ACTIVITY OF GAMMA IRRADIATED LACTARIUS DELICIOSUS L. FROM NORTHEAST PORTUGAL

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A diet rich in natural antioxidant compounds has been linked to a reduced risk of developing chronic oxidative stress-related diseases, including cancer and cardiovascular and neurodegenerative diseases. In addition to their highly appreciated nutritional value, mushrooms could be an interesting source of antioxidant compounds [1]. Nevertheless, their short shelf-life might be a limitation to the distribution and marketing of fresh mushrooms. Gamma irradiation could be an alternative to ensure the quality and extend mushrooms shelf-life, that has been used in several food products (Directive 1999/2/EC).

Herein, the effects of gamma irradiation (0.5 and 1 kGy performed in a ^{60}Co experimental equipment) and storage time (0, 4 and 8 days at 4 °C) in antioxidant potential of the wild edible mushroom *Lactarius deliciosus* L. collected in Trás-os-Montes, Northeast Portugal, were evaluated for the first time. The antioxidant properties were evaluated through scavenging activity against 1,1-diphenyl-2-picrylhydrazyl (DPPH) radicals, reducing power (RP), inhibition of lipid peroxidation using thiobarbituric acid reactive substances (TBARS) and β -carotene-linoleate model systems. Data obtained show influence of storage time and irradiation dose over antioxidant activity. Some effects were clearly observed, such as the case of the highest antioxidant potential observed in irradiated samples (with both doses) when compared to non-irradiated ones (control) at 0 days. Therefore, the application of gamma irradiation seemed to be advantageous for the assayed antioxidant methods, but further studied are necessary to understand the mentioned effects.

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References: [1] I.C.F.R. Ferreira, L. Barros, R.M.V. Abreu (2009) *Curr. Med. Chem.* 16, 1543-1560.

GAMMA IRRADIATION OF CHESTNUTS: DOSIMETRIC STUDY AND ITS INFLUENCE IN DRYING

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Food irradiation is a process that has been regaining an increasing interest for different food products to increase shelf life, for disinfection or sterilization. In industry the drying of chestnuts is used to produce other sub-products, such as flour. So far as we know this is the first time that the influence of gamma irradiation in drying behaviour of an european chestnuts variety was performed. First the dose rate distribution was