



The First North and East  
European Congress on Food

# NEEFood - 2012

April 22 -24, 2012  
St. Petersburg, Russia

Book of Abstracts



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RUSFoST

St. Petersburg State  
Institute of Technology  
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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  $^{60}\text{Co}$  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  $\beta$ -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 studies 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

measured in one of the four levels of a Cobalt-60 irradiation experimental chamber to evaluate the uniformity dose during the irradiation process. The corners of a rectangle with the sample dimensions were chosen, being used the chemical Fricke standard dosimeter for dose rate estimation and routine Amber Perspex during irradiations. The average dose rate for the irradiated positions was  $2.1 \pm 0.8 \text{ kGy h}^{-1}$ , and the ratio  $D_{\text{max}}/D_{\text{min}}$  was 2.5. Afterwards the chestnuts were subjected to different doses (0, 1, 3 and 6 kGy), and then dried in a forced convective oven at 50 °C. The moisture ratios for each irradiation dose, as well as the drying rates, were determined. The Page model was used to modelize the drying behaviour, obtaining adjusted R squares higher than 0.98. Only the falling rate period was detected. At beginning the drying rates were high, decreasing very fast till 2 h of drying, after that the rates practically did not change till the end of the process. For the irradiation doses up to 6 kGy, it was observed a slight difference between non-irradiated and irradiated fruits drying behaviour.

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#### CONTENTS OF GLUCOSINOLATES IN JUICES PRODUCED FROM DIFFERENT CULTIVARS OF CABBAGE

Elżbieta Radziejewska-Kubzdela, Róża Biegańska - Marecik, Michał Słodziński  
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The aim of the study was to determine contents of glucosinolates in juices produced from 4 headed cabbage cultivars. Raw material for analyses comprised cabbage cv. Krautkaiser, Kalina, Lennox and Bently. The technological process of juice production included washing of the raw material, removal of stumps, cutting, steaming, comminution and pressing. Glucosinolate contents were determined using the method described in the Official Journal of the European Communities (1990). Total, aliphatic and indolic glucosinolate contents in the tested headed cabbage cultivars and produced juices were compared. Contents of tested compounds were also determined in the raw material after 3-month storage.

The highest contents of glucosinolates were found in headed cabbage cv. Bently (164.2 mg/100 g f.w.) and Kalina (168.2 mg/100 g f.w.). In case of the other cultivars the content of the above mentioned compounds was significantly lower (at  $p \leq 0.05$ ) and amounted to approx. 130 mg/100 g f.w. In juices produced from the tested headed cabbage cultivars a significant reduction ( $p \leq 0.05$ ) was recorded for glucosinolates. In juice made from cv. Bently their content amounted to 43%, while in case of the other cultivars it was  $30\% \pm 3$  their content in the raw material. In juices produced from cv. Bently and Krautkaiser a significant increase ( $p \leq 0.05$ ) was found for the percentage of indolic glucosinolates in relation to aliphatic glucosinolates, while for juices made from