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CHEMICAL COMPOSITION AND ANTIOXIDANT ACTIVITY OF FROZEN, DRIED AND COOKED WILD EDIBLE MUSHROOMS

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Wild mushrooms are becoming more and more important in our diet for their nutritional and pharmacological characteristics. The high protein and low fat/energy contents of wild edible mushrooms, reported by many workers including by our research group, make them excellent foods for use in low caloric diets. Mushrooms have also become attractive as a functional food and as source for the development of drugs and nutraceuticals. Edible mushrooms are characterized by a short shelf life (1-3 days at room temperature), linked to the occurrence of post-harvest changes. These changes are due to the high moisture content of the carpophores and to the high activity of enzymes such as protease or polyphenol oxidase, responsible for protein and sugar decrease and for a browning reaction during storage. The drying and deep-freezing processes have been used to increase storage stability and facilitate mushroom consumption without seasonal constraints. The objective of this study was to evaluate the modifications induced by different conservation treatments (drying and freezing) or cooking in the chemical composition and antioxidant properties of four Portuguese wild edible mushroom species (*Lactarius deliciosus*, *Macrolepiota mastoidea*, *Macrolepiota procera*, *Sarcodon imbricatus*). Dried, frozen and cooked samples were analyzed for proximate constituents (moisture, fat, crude protein, ash, carbohydrates) and nutritional value. Fatty acid and sugar profiles were also obtained by gas-chromatography coupled to a flame ionization detector (GC/FID) and high performance liquid chromatography coupled to a refraction index detector (HPLC/RI), respectively. The antioxidant properties were evaluated by several chemical (DPPH radical scavenging capacity and reducing power) and biochemical assays (inhibition of β -carotene bleaching and inhibition of lipid peroxidation in brain tissue using thiobarbituric acid reactive substances). The results of this study [1] show that mushroom specie, and processing and cooking practices are all effective determinants either for chemical composition or antioxidant properties. Cooked samples proved to have lower nutrients concentrations and lower antioxidant activity either than dried or frozen samples. In what concerns to fatty acids and sugar individual profiles, only the cooked sample proved to be relevant.

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