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Nutritional and nutraceutical potential of saprotrophic and mycorrhizal wild edible mushrooms from Northeast Portugal

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Mushrooms are appreciated all over the world not only by their texture and flavour, but also by their chemical, nutritional [1] and functional properties [2,3]. The consumption of wild growing mushrooms has been preferred to eating of cultivated fungi in many countries of central and Eastern Europe. Nevertheless, the knowledge of the nutritional value of wild growing mushrooms is limited. The present study reports the nutritional and nutraceutical potential of five saprotrophic (*Calvatia utriformis*, *Clitopilus prunulus*, *Lycoperdon echinatum*, *Lyophyllum decastes*, and *Macrolepiota excoriata*) and five mycorrhizal (*Boletus erythropus*, *Boletus fragrans*, *Hygrophorus pustulatus*, *Russula cyanoxantha*, and *Russula olivacea*) wild edible mushrooms. The nutritional composition was determined on the bases of moisture, proteins, fat, carbohydrate and ash. For the nutraceutical potential the antioxidant activity was evaluated by different *in vitro* chemical and biochemical assays: scavenging effects on DPPH (2,2-diphenyl-1-picrylhydrazyl) radicals, reducing power, inhibition of β -carotene bleaching and inhibition of lipid peroxidation in brain cells homogenates by TBARS (thiobarbituric acid reactive substances) assay. The results were compared to bioactive compounds: phenolics and ascorbic acid (determined by spectrophotometric techniques); tocopherols (HPLC/fluorescence), sugars (HPLC/RI) and fatty acids (GC/FID). Mycorrhizal species revealed higher sugars concentration (16–42 g/100 g dw) than the saprotrophic mushrooms (0.4–15 g/100 g). Furthermore, fructose was found only in mycorrhizal species (0.2–2 g/100 g). The saprotrophic *L. decastes*, and the mycorrhizal species *B. erythropus* and *B. fragrans* gave the highest antioxidant potential, mainly due to the contribution of polar antioxidants such as phenolics and sugars [4]. The bioactive compounds found in wild mushrooms give scientific evidence to traditional edible and medicinal uses of these species.

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