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BIOACTIVE AND CHEMICAL PROPERTIES OF EDIBLE MYCORRHIZAL MUSHROOMS FROM NORTHEAST PORTUGAL

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Mushrooms are widely appreciated all over the world for their nutritional properties¹ and pharmacological value as sources of important bioactive compounds.^{2,3} Mycorrhizal macrofungi associate with plant roots constituting a symbiotic relationship, beneficial for both plant and fungus.

In the present work five edible mycorrhizal species (*Amanita caesarea*, *Cortinarius anomalus*, *Cortinarius violaceus*, *Lactarius volemus* and *Suillus luteus*) from Northeast Portugal were studied for their bioactive and chemical properties. Antioxidant activity was accessed by *in vitro* assays: radical scavenging activity, reducing power, and lipid peroxidation inhibition. Bioactive compounds such as phenolic compounds, vitamins (ascorbic acid and tocopherols), sugars and fatty acids were obtained by high performance liquid chromatography (HPLC) or gas-chromatography (GC) coupled to different detectors. The main compounds identified in each class were: Phenolic compounds- protocatechuic, *p*-hydroxybenzoic and *p*-coumaric acids; Tocopherols- the four isoforms α , β , γ and δ ; Sugars- mannitol and trehalose; Fatty acids- oleic acid (C18:1n9), linoleic acid (C18:2n6) and palmitic acid (C16:0). A similar profile of metabolites was observed in the studied mushroom species with the order sugars > fat > ascorbic acid > phenolic compounds > tocopherols. Nevertheless, the samples revealed different compositions: prevalence of sugars in *Lactarius volemus* (28.22 ± 1.81 g/100 g dw), ascorbic acid (343.96 ± 30.98 mg/100 g) and phenolic compounds (8.68 ± 0.38 mg/100 g) in *Cortinarius anomalus* and fat (3.45 ± 0.65 g/100 g), tocopherols (449.76 ± 52.96 μ g/100 g) and antioxidant activity in *Suillus luteus* (EC₅₀ values 1.92 ± 0.08 , 0.75 ± 0.03 , 0.61 ± 0.02 mg/ml for radical scavenging activity, reducing power, and lipid peroxidation inhibition, respectively).

The studied properties suggest mycorrhizal mushrooms as suitable natural healthy products to be included in our diet. This study is included in a broader project intending to valorise the traditional native mycological flora of North-Eastern Portugal, of great interest for the economical development of this region.

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