

Araújo-Rodrigues, H., Salsinha, A. S., Amorim, M., Relvas, J. B., Kekhasharú Tavaría, F., & Pintado, M. E. (2023). *Chemical and Bioactive Composition of Mushroom Biomass: Understanding their Nutritive and Health Value*. Abstract from 3rd Online Conference - Circular Economy: Make It Happen.

Beyond interesting nutritional properties, mushrooms possess numerous bioactive compounds involved in human health¹. Distinct macromolecules are found in the mushroom mycelium and fruiting body. Mushroom biomass (MB) corresponds to the mycelium and young fruiting body (primordia). A synergetic effect between their different molecules has been proposed². Additionally, the entire mushroom valorization may increase the economic value and minimize waste, contributing to a circular economy approach. To understand the MB nutritional value, the chemical and bioactive composition of three food and medicinal species was assessed for the first time, namely, *Coriolus versicolor* (CV), *Herichium erinaceus* (HE) and *Pleurotus ostreatus* (PO). The methodological approaches included: enzymatic kits for fiber and glucans quantification; inductively coupled plasma-optical emission spectrometry for mineral analysis; and gas-chromatography and high-performance liquid chromatography for other groups' quantification. No significant differences were found in total amino acids (AAs; 6.3-6.9%), α -glucans (71-78%) and β -glucans (3-5%) between species. Higher amounts of total (6.2%) and soluble proteins (2%), ash (1.5%), free sugars (1.2%) and free AAs (0.4%) were found in CV. Regarding HE composition, this had higher carbohydrates (93.1%), fat (1.8%), fiber (6.1%) and energy (382 kcal/ 100 g). The results of free and total AAs suggested that glutamic and aspartic acids, arginine, alanine and leucine were the most prevalent. Concerning mineral and fatty acid composition, the results indicated that the three species possessed very interesting profiles, being good sources of phosphorus, magnesium, calcium and potassium; and oleic, linoleic and α -linolenic acids. Moreover, a significant presence of other important bioactive groups that play important roles in human health was detected such as phenolics, carotenoids, and ergosterol in CV; and tocopherols in HE. The antioxidant capacity tests also suggested the high antioxidant potential of CV. These results demonstrated the high potential of these MBs to be used in human nutrition and health applications.