

Mushrooms as natural resources for functional foods and biologically active compounds

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From ancient times, food has served not only for nourishment but as a source of essential nutrients. However, modern dietary habits often prioritize taste over nutritional value, contributing to diet-related issues ranging from nutrient deficiencies to chronic conditions like coronary heart disease, hypertension, atherosclerosis, and type 2 diabetes. Growing awareness of the link between diet and health is driving demand for foods that offer benefits beyond basic nutrition, forming the foundation of the functional foods concept. Mushrooms, with their unique taste, nutritional and low-calorie profile, as well as presence of numerous health-beneficial compounds are in the spotlight as ideal candidates for functional foods. Thus, fruiting bodies of mushrooms are a mixture of dietary fiber, proteins, and a variety of vitamins (B1, B2, B12, C, D, E), along with minerals (iron, copper, manganese, zinc) and beneficial bioactive compounds like terpenes, fatty, phenolic and organic acids, tocopherols etc. These compounds are not only nutritionally valuable but also support metabolic pathways and show bioactive properties beneficial to human health. Recent research commended mushrooms for their antimicrobial, antitumor, anti-inflammatory, hepatoprotective, neuroprotective, cardioprotective, and immunostimulatory effects. These beneficial properties, along with their culinary appeal, versatility, and functional properties positioned them at the front line of modern food industry, with numerous mushroom-based foods and beverages being developed. This high exploitation of mushroom biomass is enabled by the fact that mushrooms may be cultivated on various substrates (including various types of waste) as well as in reactors in controlled conditions. This could allow mushroom use as source of vegan proteins, nutraceuticals, and food flavoring agents on a larger scale or in populations with limited access to mushrooms. Furthermore, this could increase circular economy initiatives in the near future.

Keywords: mushrooms; food; health-beneficial; biological activity