

Nutraceuticals and Nutrition Supplements

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The world of mushrooms nutraceuticals and functional food products: Closing the gap between nutritional research and medical community

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Mushrooms have been part of the human culture for thousands of years and have considerable interest in the most important civilizations in history because of their nutritional value and medicinal properties. In recent years, mushrooms are distinguished as important natural resources for developing functional foods, nutraceuticals (dietary supplements) and drugs. As functional foods, mushrooms have been considered as “the new superfood” and are becoming a vital component of human diet for improving health and promoting quality of life. Approximately 130 medicinal functions have been described in mushrooms. The chief pharmacological uses of mushrooms discovered so far are as antitumor, immunomodulatory, antioxidant, antimicrobial, antidiabetic, hypocholesterolemic, etc. As a result of these properties, some mushrooms extracts and powders are used for the prevention and treatment of various life threatening diseases and are found as nutraceuticals (dietary supplements). Mushrooms nutraceuticals and functional foods (NFF) are not merely lifestyle interventions. Similar to pharmaceutical agents, NFF contain bioactive substances such as polysaccharides (e.g. β -D-glucans), terpenoids, phenolics, functional properties, etc. that, when administered at therapeutic doses target and modulate biological processes (e.g., intracellular signaling cascades) that foster the development of disease. Particularly mushrooms immunocuticals, mainly polysaccharides such as β -D-glucans with antitumor and immunomodulatory effects have proceeded successfully through clinical trials and are used to treat cancer and chronic diseases. As a case study, recent advances in research conducted on the oyster mushroom (*Pleurotus* spp.), a good source of antioxidants and a candidate for immunotherapy applications are discussed in this lecture. *Pleurotus* NFF could potentiate the host defense mechanisms and should be promising for further pharmacological studies. The effects on cell immunity are especially valuable in the prophylaxis of tumors, immunodeficiency and as co-adjuvant in chemotherapy. The results also demonstrate that not only mushrooms but also their mycelia may be an interesting renewable resource for nutraceuticals production. There is no better time for mushroom NFF to emerge as judged by their positive impact in human quality of life. The gap that exists between NFF research and the medical community needs to be closed so that mushrooms NFF can be implemented throughout all the stages of therapy. Although not “magic” products like those of “Alice in Wonderland”, based on the multiple biological properties of mushroom NFF the concept of Stephen DeFelice “One good nutraceutical can wipe out the drugs” has gained momentum in recent years. In sum, this lecture provides insights into the potential of mushrooms’ NFF world as healthcare biotech- products which will keep being one of the foremost spotlights of research in the upcoming prospect as well.

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