

Giant oyster mushroom, *Pleurotus giganteus* (Agaricomycetes): Current status of the cultivation methods, chemical composition, biological, and health-promoting properties

ABSTRACT

Pleurotus giganteus (Berk.) Karunarathna & Hyde is one of the largest edible mushrooms which can be found either in groups or solitary and in soil and buried woods, but seldom in grassland. It has been recorded in Southeast Asia, Australasia, and China by either its common names or local names. Previously known as *Lentinus/Panus giganteus*, its unique physical characteristics and the utilization of molecular tools have since anchored its taxonomical position in the *Pleurotus* genus. A sawdust-based substrate coupled with soil casing method is described as a standard cultivation procedure for *P. giganteus*. The basidiocarp of *P. giganteus* is found to be rich in carbohydrates, proteins, polyunsaturated fatty acids, and polysaccharides. Both ethanol and aqueous extracts of *P. giganteus* have been studied in vitro for its antioxidative, antifungal, anticancer, hepatoprotective, and neurite outgrowth capabilities. The review covers the optimum cultivation methods of *P. giganteus*, as well as its various biological activities and medicinal properties that have been studied by different approaches. Available data in regards to the chemical compounds present in *P. giganteus* are also compiled for future references. Overall, both in vitro and in vivo studies have shown significant bioactivity comparable to other recognized Pleurotoid mushrooms.