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## A Study on the Industrial Production Technology of *Fomitopsis pinicola* and its Commercialization for Functional Ingredients

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*Fomitopsis pinicola* is an edible mushroom and is famous for its high  $\beta$ -1,3-glucan contents, anticancer activity and hypoglycemic effect on diabetes. Our work studies the nutritional and functional aspect of *F. pinicola* extracts of water and organic solvents. This lecture will discuss the industrial production technology of a fruit body and a hypha of *F. pinicola*. We have established the optimum culture condition for hypha and fruit body production using liquid and sawdust media. Using water and organic solvent extracts, we have assayed the biological activities including anti-cancer activity and hypoglycemic effect. We have isolated the active compounds from the extracts and analyzed the chemical structure of them. Also, we have elucidated the possible mechanisms for the biological activities. Finally, we have developed the foods and the nutraceuticals products including the extracts.

**Key words:** *Fomitopsis pinicola*, industrial production, commercialization

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## Trends of Mushroom Research and Mushroom Industry

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A mushroom is defined as a macrofungus with a distinctive fruiting body which can be either epigeous or hypogeous. The fungi have spore-bearing organ of fruiting bodies large enough to be seen with the naked eye and to be picked up by hand. Mushrooms breed by basidiospores or ascospores. According to UPOV (International Union for Protection of New Varieties of Plants), mushroom spawn market have to be opened by the year 2009. One hundred and ninety-four commercial strains of 23 species in mushrooms were distributed to cultivators. By the way, only 14 varieties of them have registered variety protection. Mushroom industry as important export products developed from 1960 to 1980. Production of mushrooms as food was 201,756 metric tons valued at 1,000 billion Korean won in 2005. Isolated and identified substances from mushrooms are promising antifungal, antiinflammatory, antitumor, antiviral (anti-HIV), antibacterial & antiparasitic, antidiabetic, immunomodulating, kidney tonic, hepatoprotective, nerve tonic, and sexual potentiator. These substances can also be used for blood pressure regulation and effective against cardiovascular disorders, hypocholesterolemia & hyperlipidemia, and chronicbronchitis. Mushroom products including pharmaceuticals, tonics, healthy beverages, functional biotransformants, and processed foods have also become available on the markets. Compost and feed can likewise be made from mushroom substrates after harvest. The mushroom industry is already one of the fastest growing investment sectors in Korea. By the way, there is a need to strain improvement for variety protection, advanced cultivation technology at low cost for growers, and control of demand and supply for marketing in order to more upgrade development of mushroom industry in the future.

**Key words:** Commercial strains, medicinal substances, mushroom research & industry, variety protection