Health Benefit of the *Pleurotus sajorcaju* (Fr.) Singer (Oyster Mushroom) in India

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Mushrooms have attracted the attention of man from very ancient times, and the use of mushrooms as food is as old as human civilization. The cultivation of mushrooms can be considered as the most economic method of converting lignocellulogic agricultural wastes to consumable, protein-rich biomass. Use of edible fungi forms are an important step in the process of microbial biotechnology, in which a useful edible product is obtained from agricultural or industrial waste, which may otherwise pose environmental problems. Studies were carried out on cultivation of oyster mushrooms; nutrient analysis was performed at different stages of maturity; *in vivo* digestibility studies on albino rats were conducted; and effects of cooking methods on nutrients and studies on non-insulin–dependent rats were described. The effect of fiber on diabetic patients was observed, and recipes were developed for consumer awareness.

Mushroom cultivation was carried out using paddy straw and paddy husk, and the results indicated that the yield obtained from paddy straw was high (500 g/bed) when compared with the paddy husk (400 g/bed). Paddy straw is considered the best substitute for cultivating *Pleurotus sajocaju* (Fr.) Singer in terms of yield. In rural areas a women can easily manage 4–10 beds, depending on the space available, helping them to earn Rs.180–450 per week as supplementary income.

Mushrooms provide high-quality proteins and are low in calories. The protein in *P. sajorcaju* is rich in all the essential amino acids required for an adult. Approximately 25–35% of total amino acids occur as free amino acids. They are also known to be excellent sources of riboflavin, niacin, and patothenic acid. The mineral content in fresh mushrooms is higher than is found in many fresh vegetables and fruits.

Three different stages of maturity were described: immature (2 days before harvesting), mature (at the time of harvesting), and dried (matured and sun-dried). No significant difference was observed between immature and mature stages. Dried *P. sajorcaju* contained more nutrients.

Studies on *in vivo* digestibility of *P. sajorcaju* protein carried out on young male albino rats given 10% levels of protein revealed 87% digestibility of mushroom protein, compared to 93% for edible soy bean cake, which is significantly different at 5% level.

The three common methods were used in this study—namely, boiling in water for 10 minutes, shallow frying in refined oil for 10 minutes, and deep frying in refined oil for 10 minutes—revealed that the loss of nutrients were greater in shallow frying, followed by deep frying, and minimal in boiling. Vitamin C losses varied from 50–75% based on the type of cooking. Heat treatment did not affect the crude fiber, fat, and ash contents. Inclusion of paddy straw mushroom powder in the hypercholestremic diets significantly reduced total plasma lipids, total cholesterol, and the level of glycerides, whereas free fatty acids and phospholipids levels were not much affected.

The effect of fiber (at 10% and 15%) from *P. sajotcaju*, spinach, and isalbgol on blood glucose response

in 24 non-insulin dependent diabetic patients (NIDDM) from a diabetic clinic was investigaged. Fifteen percent of fiber from mushroom was found to be effective. Mushroom powder was incorporated effectively in weaning foods, which served as a useful protein source and also contributed major nutrients such as protein and calcium.

With the idea of popularizing the mushrooms among the local communities, some recipes such as mushroom soup, mushroom curry, creamy mushrooms, pizza stuffed capsium, pan cakes, pakoda, omlet, sandwichs, ketchup, chutney, pickle, baked mushrooms, mushroom flavoured rice, mushroom garlic sauce, mushroom flakes, mushroom chips, mushroom instant soup powder, noodles, and macaroni were developed. The organoleptic analysis indicated that the overall acceptability is very good. Mushrooms can be preserved for a longer period, significantly through pickles, powder, soup powders, masala powders, and noodles, etc.