



STUDY ON NUTRIENT STATUS OF MUSHROOMS [*PLEUROTUS CITRINOPLEATUS*, *PLEUROTUS DIAMOR*, *PLEUROTUS EVOUS* (CULTIVATION), *AGARICUS BISPOROUS*, *CALOCYBE INDICA*]

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ABSTRACT

India is the second most populous country of the world. Increase in population is creating an alarming situation in the food problem in India. Malnutrition in terms of protein deficiency is one of the major factors responsible for high mortality and morbidity in this country and other developing countries of the world. Animal protein [meat] is beyond the reach of Low income group which forms a large proportion of our population. Mushrooms and yeast foods are frequently mentioned as alternative sources of food. Mushrooms are an exotic food source of vegetarian protein. Mushrooms also do environmental services that are it degrading waste organic material to prevent pollution and also spend compost as soil conditions and fertilizer. Nutritional status of selected five varieties [*Pleurotus citrinopileatus*, *Pleurotus diamor*, *Pleurotus evous* (Cultivation), *Agaricus bisporous*, *Calocybe indica* (commercially purchased)] of mushroom with respect to carbohydrates, protein, crude fibre, iron, calcium, Vitamin B₁, Vitamin B₂ and Vitamin C were analyzed.

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INTRODUCTION

In India, about 80% of the population is dependent on agriculture and since the last 2-3 decades, huge quantities of wheat, paddy straw, ricehusk, sugarcane bagasse and maize stalks have become surplus in some the North Indian states. In certain areas, dispose of these surplus materials is posing a great problem. *Pleurotus* species have extensive enzyme systems capable of utilizing complex organic compounds which occur as agricultural wastes and industrial by-products. For this reason, it is not necessary to process substrates for cultivation of *Pleurotus* species (Khan and Chaudhary, 1987; Yalinkilic *et al.*, 1994). *Pleurotus* species are found to be one of the most efficient lignocellulosic solid state decomposing types of white rot fungi. Thus, many agricultural and industrial wastes can be utilized for production of *Pleurotus* species as a substrate (Zadrazil and Brunnert, 1981; Platt *et al.*, 1983; Platt *et al.*, 1984). These agrowastes have been found suitable for the cultivation of various edible mushrooms. Mushroom cultivation represents one of the efficient ways by which these residues can be recycled (NAS, 1979). *Pleurotus* species are wood destroying saprophytic fungi which occur widely in the tropical and temperate zone. Species of *Pleurotus* genus are commercially known as "Oyster Mushroom".

MATERIALS AND METHODS

This work was carried out in the Department of PG

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Well grown mother spawn (20 days old) of *Pleurotus citrinopileatus* (CO₁), *Pleurotus evous* (APK), *Pleurotus diamor* (MDU) was obtained from the agricultural college and Research Institute, Madurai. The cultivation of *Pleurotus* species was carried out as described by Bal and Thopa (1979). *Agaricus bisporous* and *Calocybe indica* were commercially purchased. Fresh weight, Total carbohydrate (Anthrone method), protein (Lowry's *et al.*, 1951), Crude fibre (Sadasivam and Manickam), Iron, Phosphorus (ANSA method), Calcium, Niacin, Ascorbic acid, Methionine (Sadasivam and Manickam) parameters were taken into consideration for the study of nutritive value of the edible mushrooms.

RESULTS AND DISCUSSION

Pleurotus citrinopileatus, *Pleurotus diamor*, *Pleurotus evous* were cultivated by using paddy straw as a substrate for about 40 and 30days respectively during which three flushes were harvested. *Calocybe indica*, *Agaricus bisporous* were obtained commercially and analysed. Nutritional status of selected five varieties [*Pleurotus citrinopileatus*, *Pleurotus diamor*, *Pleurotus evous* (Cultivation), *Agaricus bisporous*, *Calocybe indica*] of mushroom with respect to carbohydrates, protein, crude fibre, calcium, Vitamin B₁, Vitamin B₂ and Vitamin C were shown in table1.

| Parameters | <i>Pleurotus evous</i> | <i>Pleurotus diamor</i> | <i>Pleurotus citrinopileatus</i> | <i>Calocybe indica</i> | <i>Agaricus bisporus</i> |
|---------------------|------------------------|-------------------------|----------------------------------|------------------------|--------------------------|
| Carbohydrates (g%) | 3.3 | 1.0 | 2.0 | 6 | 4 |
| Protein (mg%) | 13.2 | 44 | 28 | 12 | 36.4 |
| Crude fibre (mg%) | 62.5 | 50 | 39.5 | 45 | 50 |
| Iron (mg%) | 0.04 | 0.08 | 0.16 | 0.12 | 0.14 |
| Calcium (mg%) | 34.7 | 59.2 | 43.9 | 81.7 | 22.4 |
| Potassium (mg%) | 0.08 | 2.9 | 0.34 | 3.32 | 1.60 |
| Phosphorus (mg%) | 0.25 | 0.014 | 0.11 | 0.02 | 0.30 |
| Niacin (mg%) | 0.12 | 0.03 | 0.02 | 0.019 | 0.032 |
| Ascorbic acid (mg%) | 0.04 | 0.032 | 0.016 | 0.01 | 0.024 |
| Methionine (mg%) | 0.4 | 0.8 | 1.6 | 1.2 | 2.0 |

Calocybe indica showed increased accumulation of carbohydrates when compared to another four species. *Agaricus bisporus* ranks second. The results of our study coincide with Bano and Rajarathinam, 1982. *Pleurotus djamor* and *Agaricus bisporus* showed three fold increases in protein content than *pleurotus evous*, *Calocybe indica*. *Pleurotus citrinopileatus* showed slight decrease in protein content. The results were supported by Rai *et al.*, 1988 and Khana & Garcha (1984). *Pleurotus citrinopileatus* showed marked decrease in crude fibre content. *pleurotus djamor* and *Calocybe indica* showed no difference. Crude fibre content was in accordance with Bano *et al.*, 1981, and Raj *et al.*, 1988. *Pleurotus evous* has significant amount of crude fibre, Vitamin C and Niacin. *Agaricus bisporus* is rich in methionine and phosphorus. Calcium is extra ordinarily high in *Calocybe indica*. *Agaricus bisporus* showed four fold decreases than *Calocybe indica*. Among the selected varieties, *Pleurotus evous*, *Pleurotus djamor* showed lesser amounts of iron than other three species. From the nutritional point of view *Calocybe indica* was lacking behind the others. *Pleurotus evous* and *Agaricus bisporus* were rich in phosphorus. Phosphorus in the *Pleurotus djamor* to vitamin C, the varieties showed slight difference only. With highest amount was noted in *Pleurotus evous*. *Pleurotus djamor* and *Agaricus bisporus* showed marked elevation in Niacin content. Other varieties showed no wide variation. The amount of methionine was highest in *Agaricus bisporus* and least in *Pleurotus evous*.

CONCLUSION

Among the varieties of *Pleurotus* species, nutritional status of *Pleurotus evous* with carbohydrate, crude fibre, phosphorus and vitamins too where as protein, calcium, potassium were predominately high in *Pleurotus djamor*, *pleurotus citrinopileatus* was comparable to others only in iron. *Calocybe indica* was nutritionally deficient than *Agaricus bisporus* except with carbohydrate, calcium and potassium. Oyster mushrooms are ideal food for diabetic, heart patients and obese persons because mushrooms has high amount of crude fibre and low caloric value and also it has low sodium and high potassium that are ideal food for people with blood pressure.

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