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Effect of organic and inorganic supplementation on the yield and biological efficiency of two *Pleurotus* spp. growth on different agricultural wastes

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SUMMARY

Different concentration of carbon sources *i.e.* lactose, nitrogen sources *i.e.* peptone, inorganic chemicals *i.e.* $MgSO_4$ and $FeSO_4$, vitamin sources *i.e.* vit. B-complex, growth promoter *i.e.* EDTA and organic source *i.e.* wheat flour, besan flour, soya flour and rice flour were screened to determine the most suitable concentration for better yield of two *Pleurotus* species *i.e. P. sajor caju* and *P. Florida*. Two lignocellulosic agricultural waste material *i.e.* wheat straw and paddy straw were used for experimentation. It was found that organic source soya flour-3% gave maximum yield and biological efficiency of *P. sajor caju* in wheat straw (97.7 %), beasn flour-1% concentration in wheat straw in *P. sajor caju* (95.7%), inorganic source lactose-3% concentration in *P. sajor caju* (96.5%) in wheat straw. *P. florida* gave maximum yield and biological efficiency with soya flour-3% in wheat straw (94.1%).On that basis of Lactose and $FeSo_4$ were proved superior carbon source and inorganic chemical, respectively. Vitamin B-complex gave maximum yield and biological efficiency in *P. sajor caju* with 100 mg/l in wheat straw (94.0%). Among the two lignocellulosic agricultural waste material used as a substrate, best growth and high yield was found in *P. sajor caju* in wheat straw.

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Key words : Supplement, Biological efficiency, Lignocellulosic waste

The cultivation of edible fungi has been accepted as the easiest on farm biotechnology for profitable removal of various lignocellulosic agricultural, industrial and forestry by-products, specially in the developing countries. Although about 200 species of edible fungi have been reported from India, only three *viz.*, *Pleurotus* spp., *Agraricus bisporus* and *Volvariella* species are preferred for commercial cultivation. *Pleurotus* species constitute about 65% of the total mushrooms production in the country (Munjal, 1982).

Vast quantities of renewable lignocellulose wastes are generated every year in developing countries like India with economics, which are agricultural based. However, mushroom spp. have been reported to grow and yield successfully on many plant wastes. In special reference of Chhattisgarh, the agricultural waste material left after animal consumptions can be used as substrates for mushroom production. *Pleurotus* species show much diversity in their adaptation to the varying agro-climatic conditions and show difference in yield depending on the substrates and organic amendments used. Wide spread malnutrition with ever-increasing gap in developing countries has necessitated the search of alternative sources of protein because the production of pulses has not kept pace of our requirement due to production growth.

Different concentrations of carbon source (lactose), nitrogen source (peptone), Inorganic chemicals ($MgSO_4$ and $FeSO_4$), growth promoters (EDTA), vitamin source (B- Complex) and organic supplement wheat flour, besan flour, soya flour and rice flour were screened to determine the most suitable concentration for better yield, biological efficiency and suitable substrates of *Pleurotus sajor caju* and *Pleurotus florida*. The aim of various different organic and inorganic supplementations was to get maximum production of fruiting bodies but it is an intricate problem. Moreover, the knowledge, shall help to plan and prepare for the crop and equip one with a physiological tool to control the quality, quantity, timing and other characters of the mushroom production.

MATERIALS AND METHODS

This work was carried out in Biotech. Lab. training

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