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Effect of chemical supplementation on the yield and biological efficiency of *Pleurotus sajor caju* grown in three different lignocellulosic wastes in Chhattisgarh, India

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In recent years the mushroom technology has traveled far a head. The domestication of various mushroom species has been tried globally, many of which are now commercially cultivated for food as well as medicinal purposes for an amateur and professional cultivator. The production of mushroom has become important factor, which does not promote the growers. The important priority of profession is to maximize the production of mushroom by using various techniques. Different concentration of carbon sources i.e. lactose (1.0%, 2.0% and 3.0%), nitrogen sources i.e. peptone (1.0%, 2.0% and 3.0%), inorganic chemicals i.e. $Mgso_4$ (1.0%, 2.0% and 3.0%), vitamin sources i.e. vit. B-complex (100, 200 and 300 mg/l) and growth promoter i.e. EDTA (0.1%, 0.2% and 0.3%) were screened to determine the most suitable concentration for better yield of *Pleurotus sajor caju*. Three lignocellulosic agricultural waste material i.e. wheat straw, paddy straw and leman grass straw used for cultivation of *Pleurotus sajor caju* It was found that carbon source and inorganic chemical gave maximum yield and biological efficiency in 2.0% concentration in wheat straw. On that basis lactose and $Mgso_4$ were proved superior carbon source and inorganic chemical, respectively. peptone, the semisolid protein as nitrogen source gave maximum yield and biological efficiency in 3.0% concentration in lemon grass straw while in case of growth promoter it was observed maximum in 0.2% concentration in wheat straw. vitamin B-complex gave maximum yield and biological efficiency in 300-mg/l concentrations in wheat straw, among the three lignocellulosic agricultural wastes material used as substrate, best growth and high yield of *Pleurotus sajor caju* was obtained in wheat straw.

Key words : Chemical supplement, Biological efficiency, Lignocellulosic waste.

INTRODUCTION

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 spp.* are preferred for commercial cultivation and *Pleurotus spp*. alone constitutes about 65% of the total mushrooms production in the country (Munjal, 1982). These species of mushrooms belong to the class basidiomycotina and exhibit two distinct phases in their life cycle, a vegetative phase called hyphae which branch and extend into mycelium and a reproductive phase characterized by the development of a fleshy sporophore referred to as mushroom fruit body. It is this structure, which is prized for its high nutritive value and culinary properties (Mehta, 1990).

Mushrooms are a class of heterotrophic fungi and due to the absence of chlorophyll in their cells they completely depend on the substrate for all their nutritional requirement of carbon, water, nitrogen and minerals. In any cultivation programme on mushroom the primary requiste is preparing a suitable substrate. *Pleurotus sajor caju* can grow on a variety of fresh lignocellulosic residues requiring very little pretreatment (Bano *et al.*, 1982).

Mushrooms are used as delicious flavored food and having nutritional value between meat and vegetables, mushrooms are rich in protein, vitamin and minerals. It is low caloric food with very high potassium, sodium ratio and without starch as well as cholesterol. Vast quantities of renewable lignocelluloses wastes are generated every year in developing countries like India with economics, which are basically agricultural. However mushroom spp. have been reported to grow and yield successfully on many plant wastes. In special reference of chhattisgarh 36.4 lakh ton of agricultural waste material left after animal consumptions can be used as substrates for mushroom production.