

Extracellular enzyme production during anamorphic growth in the edible mushroom, *Pleurotus sajor-caju*

ABSTRACT

Cultivation of mushrooms on lignocellulosic wastes represents a cost-effective organic recycling process. *Pleurotus sajor-caju* grown on cotton-waste produced relatively low levels of three components of the cellulase complex namely cellobiohydrolase (EC 3.2.1.91), CMCase (EC 3.2.1.4) and α -glucosidase (EC 3.2.1.21) with specific activity values of 10.0, 71.4 and 21.6U (mg protein)⁻¹ respectively after 15days. Higher specific activity was registered in alkali-treated cotton with 15.6, 83.4 and 56.1U (mg protein)⁻¹ respectively after 20days. Lower levels were noted on rubber-tree sawdust substrate with specific activity values of 0.28, 0.62 and 0.75U (mg protein)⁻¹ for the respective enzymes after 28-35days growth. The maximum production of xylanase (EC 3.2.1.8) of 0.63U (mg protein)⁻¹ occurred after 20days while a relatively higher level of the phenoloxidase enzyme, laccase (EC 1.10.3.2) of 27.4U (mg protein)⁻¹ (maximum) was found after 35days. Laccase, the activity of which is associated with morphogenesis, increased with mycelial growth, peaked at maximum growth and thereafter decreased rapidly. This could prove important commercially in timing the end of spawn-run in preparation for initiation of fruiting.

Keyword: Carboxymethylcellulase; Cellobiase; Cellobiohydrolase; Laccase; *Pleurotus sajor-caju*; Xylanase