Abstract

Mushroom cultivation is an effective method for the production of nutritional food in addition to offering a holistic approach to agro waste management by utilization of the abundant lignocellulosic waste including sisal leaf decortications waste (SLDW). Production of 1 kg of mushrooms generates 5 kg of a co-product called spent mushroom substrate (SMS). Alternative means of disposal of the resulting SMS is production of extracellular enzymes generated by mushrooms during their growth and development. In this study, Pleurotus HK 37 was studied for its ability to produce laccase manganese peroxidase (MnP), lignin peroxidise (LiP) and xylanase on SLDW under solid-state fermentation. Laccase activities reached the highest values of 27.3 U/ml when the substrate was fully colonised. The activity then declined
with each subsequent harvest to 15.0 U/ml. MnP assay had two peaks of 8.9 U/ml and 8.0 U/ml
on full colonisation and during the 3rd flush, while LiP and xylanase activities had highest recorded activities of 0.34 U/ml and 0.28 U/ml, respectively. The results of this study demonstrate the potential utilization of sisal leaf decortications waste as raw materials for simultaneous production of edible mushrooms and extracellular enzymes from a commercial fungus, Pleurotus HK 37, which is a potential biotechnological application.