

Conversion of oil palm by-products into value-added products through oyster mushroom (*Pleurotus ostreatus*) cultivation

ABSTRACT

The oyster mushroom (*Pleurotus* species) is a popular and widely cultivated edible mushroom that can be found worldwide, including in Malaysia. However, its local production is unable to fulfil the market demand, partly due to the limited availability of rubber wood sawdust (RWS) as the conventional cultivation substrate. Furthermore, the palm oil industry in Malaysia generates large volumes of organic by-products that have caused environmental concerns. Therefore, the potential utilisation of oil palm waste-based substrates in order to develop a substitute RWS for *Pleurotus ostreatus* mushroom production is evaluated in this study, based on their agronomic performance and nutritional properties. Empty fruit bunches (EFBs), oil palm fronds (OPFs), and oil palm trunks (OPTs) were used to formulate the substrates. The control used was 100% RWS. Generally, 100% EFB showed a better agronomic performance, and mushroom growth was 1.9 times faster compared to the control, with a comparable mushroom yield. The crude protein and beta glucan content of mushrooms grown on oil palm by-product-formulated substrates were significantly higher than those grown using the control. Additionally, the number of fruiting bodies, crude protein, and beta glucan content of the mushrooms were positively correlated with potassium in the substrate. Therefore, 100% EFB could be used as a potential substitute for RWS for the cultivation and production of *P. ostreatus*