

Metabolites profiling of protein enriched oyster mushroom (*Pleurotus ostreatus* (Jacq.) P. Kumm.) grown on oil palm empty fruit bunch substrate

ABSTRACT

This study aimed to compare the nutritional composition and metabolites profiles of the *Pleurotus ostreatus* oyster mushroom grown on oil palm empty fruit bunch (EFB) and rubber wood sawdust (RWS) substrates. The mushrooms were prepared for proximate analysis, beta-glucan content, and metabolites profiling using ultra high-performance liquid chromatography-quadrupole time of flights mass spectrometer (UHPLC-QToF). Proximate analysis showed significantly higher crude protein, and beta-glucan contents ($p < 0.05$) were recovered from the mushrooms grown on EFB substrate as compared to those grown on RWS. Metabolite profiling of hot water extracts showed that three lipids (PE (17:1/0:0), PE (16:1/0:0), and hydroxyoctadecadienoic), two amino acids (acetyl-leucine, and threonic acid), and one polysaccharide (4-O-beta-d-galactopyranosyl-beta-d-xylopyranose) were present at a relatively higher level (maximum fold change >10) in mushrooms grown on EFB. Our results suggest that the metabolites of the mushroom cultivated on EFB substrate were altered. The innovative use of palm oil waste as mushroom cultivation substrate exerts the concept of waste-to-wealth, promoting Sustainable Palm Oil Initiative (SPOI), and enhancing food security through the production of high-protein mushrooms.