

ABSTRACT

Utilization of Fruit Waste Substrates in Mushroom Production and Manipulation of Chemical Composition

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The current study evaluated the effect of mushroom cultivation using fruit waste substrates on yield performance and antioxidant activities. The total phenolic content and the 2, 2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging activities of the mushroom extracts were determined using colorimetric method. Mushroom *P. eryngii* had the highest yield of 87.2 ± 2.4 g/100 g dry substrate when grown on pineapple peels, while *P.ostreatus* yielded the least fruiting bodies 53.1 ± 1.8 g/100 g dry substrate when grown on orange peels. Similarly, *P. eryngii* grown on pineapple peels and *P. ostreatus* grown on orange peels had the highest and lowest biological efficiencies of $94.2 \pm 3.5\%$ and $69 \pm 4.3\%$, respectively. The total phenolic content of *P.ostreatus* grown on avocado peels was 26.4 ± 3.8 mg GAE/g dry extract, while *P.eryngii* grown on avocado peels had the lowest at 9.3 ± 0.2 mg GAE/g dry extract. Mushrooms cultivated on fruit wastes generally exhibited higher DPPH activities than those grown on wheat straw (control) substrate. This study provided baseline information on the potential role of fruit waste substrates in mushroom growth and chemical composition.

KEY WORDS: Mushroom production, Fruit waste substrates, Agricultural waste, Resource utilization, Biodegradation, Bioconversion, Chemical composition, Nutrient enrichment, Fungal metabolism, Sustainable agriculture