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RESEARCH ARTICLE

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Bioconversion of pineapple wastes for production of *Pleurotus pulmonarius* (gray oyster mushroom) and *Pleurotus ostreatus* (white oyster mushroom)

Norliana Munir[1] | Aizi Nor Mazila Ramli[1,2] | Aimi Wahidah Aminan[1] | Sharifah Zafierah Syed Badrulzaman[1] | Reshma Vasant Patil[1,2] | Siti Zulaiha Zailani[1] | Nur Izyan Wan Azelee[3,4] | Nor Hasmaliana Abdul Manas[3,4] | Elmie Adha Ismail[5]

[1]Faculty of Industrial Sciences and Technology, Universiti Malaysia Pahang Al-Sultan Abdullah, Gambang, Pahang, Malaysia

[2]Bio Aromatic Research Centre of Excellence, Universiti Malaysia Pahang Al-Sultan Abdullah, Gambang, Pahang, Malaysia

[3]School of Chemical and Energy Engineering, Faculty of Engineering, Universiti Teknologi Malaysia, Skudai, Johor, Malaysia

[4]Institute of Bioproduct Development (IBD), Universiti Teknologi Malaysia, Skudai, Johor, Malaysia

[5]Lembaga Perindustrian Nanas Malaysia, Johor Bahru, Johor, Malaysia

Correspondence
Aizi Nor Mazila Ramli, Faculty of Industrial Sciences and Technology, Universiti Malaysia Pahang Al-Sultan Abdullah, Lebuhraya Tun Abdul Razak, 26300 Gambang, Pahang, Malaysia. Email: aizinor@umpsa.edu.my

Abstract

Mushroom cultivation is currently being widely ventured by farmers in Malaysia due to its high profits in a short time and low production cost. Mushrooms can be grown on various substrates such as rice husk and stalks, coconut fiber, and sawdust. This study was performed to find out the ability of using pineapple leaves waste as a substrate for the cultivation of *Pleurotus pulmonarius* (gray oyster mushroom) and *Pleurotus ostreatus* (white oyster mushroom) and compare the results obtained with mushrooms grown using traditional substrates (sawdust). The mushroom bags were prepared using a dry and wet medium of pineapple leaves waste. The results revealed that 60% of dry and wet pineapple leaves waste produced the highest output of *P. pulmonarius* and *P. ostreatus* in comparison to other percentages. The growing of *P. pulmonarius* on dry pineapple leaves waste substrate revealed the maximum average weight and number of fruiting bodies while *P. ostreatus* showed the best growth performance in wet pineapple leaves waste substrate. The nutritional content of 60% dry and wet pineapple leaves waste for both *P. pulmonarius* and *P. ostreatus* shown superior value in percentages of moisture, protein, fat, and carbohydrate compared to control. In the meantime, the mineral analysis revealed that 60% of the dry and wet pineapple leaves waste had greater levels of Cu, P, and Pb than the control. These findings suggested that the pineapple leaves waste can become a great alternative substrate for both *P. pulmonarius* and *P. ostreatus* cultivation for better economic and environmental benefits.

KEYWORDS

bioconversion, mushroom cultivation, pineapple leaves waste, *Pleurotus ostreatus*, *Pleurotus pulmonarius*

1 | INTRODUCTION

Mushroom cultivation has become increasingly popular around the world. In Malaysia, there are many species of edible mushrooms which are either cultivated (*Agaricus* spp., *Auricularia* spp., *Pleurotus* spp.) or harvested in the wild (*Ganoderma* spp., *Polyporus* spp., *Termitomyces* spp.) (Samsudin & Abdullah, 2019). The oyster mushroom, *Pleurotus* sp., is one of several edible mushroom species grown for their flavor and nutritional benefits (Hlerema et al., 2017). According to the websites of most local mushroom growers/companies, members of the genus *Pleurotus* are among the main species selected for commercial cultivation owing to their adaptability to both tropical and temperate conditions

