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PHYSICOCHEMICAL COMPOSITION OF SPENT OYSTER MUSHROOM SUBSTRATE

(Komposisi Fizikokimia bagi Sisa Substrat Cendawan Tiram)

Aina Nasuha Mortada, Mohamad Hasnul Bolhassan*, Rafeah Wahi

Faculty of Resource Science and Technology,
Universiti Malaysia Sarawak, 94300, Kota Samarahan, Sarawak, Malaysia

**Corresponding author: bmhasnul@unimas.my*

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Abstract

Mushroom substrate is a type of lignocellulosic material that helps promote the growth, production, and fruiting of mushrooms. The substrate contains components rich in organic matter due to the modification of the material after harvesting of mushrooms. This study analysed the physicochemical composition of spent oyster mushroom substrate (SOMS) by comparing with sterile fresh mushroom substrate (SFMS). The physicochemical analyses conducted were moisture content, ash content, pH, primary macronutrients (nitrogen, phosphorus, and potassium), secondary macronutrients (calcium and magnesium), micronutrients (iron, manganese, copper, and zinc), and carbon-to-nitrogen (C:N) ratio. The results obtained for moisture content, ash content, pH, and C:N ratio showed higher values for SOMS. The values of moisture, ash content, pH, and C:N ratio increased to 63.00%, 6.58%, 5.92, and 116.29, respectively. For the nutrients in the mushroom substrate, namely phosphorus, calcium, magnesium, iron, and copper, the values after cultivation increased to 57.14 ppm, 7366.67 ppm, 1230.83 ppm, 85.18 ppm, and 3.75 ppm, respectively. Meanwhile, the values of nitrogen, potassium, zinc, and manganese decreased to 0.38%, 706.67 ppm, 16.90 ppm, and 68.65 ppm, respectively. Sulphur content was detected in SFMS but absent in SOMS. In conclusion, mushroom cultivation changed the physicochemical composition of the mushroom substrate.

Keywords: mushroom substrate, comparison, physicochemical analysis

Abstrak

Substrat cendawan merupakan sejenis bahan yang membantu dalam menggalakkan pertumbuhan, pengeluaran dan penghasilan jana buah cendawan. Ia mengandungi komponen yang kaya dengan bahan organik hasil daripada pengubahsuaian kandungan bahan selepas penuaian cendawan. Kajian ini telah menganalisis komposisi fizikokimia sisa substrat cendawan tiram dibandingkan dengan substrat cendawan segar steril. Analisis fizikokimia seperti kelembapan, kandungan abu, pH, makronutrien primer (nitrogen, fosforus, dan kalium), makronutrien sekunder (kalsium dan magnesium), mikronutrien (besi, mangan, tembaga, dan zink), dan nisbah C:N. Keputusan yang diperolehi untuk kelembapan, kandungan abu, pH, dan nisbah C:N menunjukkan nilai yang lebih tinggi untuk sisa substrat cendawan tiram. Peratusan bagi kelembapan meningkat kepada 63.00%, kandungan abu kepada 6.58%, pH kepada 5.92, dan nisbah C:N kepada 116.29. Bagi nutrien dalam sisa substrat cendawan, iaitu fosforus, kalsium, magnesium, besi, dan tembaga, menunjukkan peningkatan selepas penanaman kepada 57.14 ppm, 7366.67 ppm, 1230.83 ppm, 85.18 ppm, dan 3.75 ppm. Bagi nitrogen, kalium, zink, dan mangan, telah menunjukkan penurunan peratusan kepada 0.38%,