

# **Analysis of Phenolic Compounds in Empty Fruit Bunches in Oyster Mushroom Cultivation and in Vermicomposting**

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## **Abstract**

Analyses of total phenolic compounds were carried out for oil palm empty fruit bunches (EFBs) vermicomposting in oyster mushrooms cultivation. The oyster mushrooms (*Pleurotus sajor-caju*) were cultivated according to the large-scale vermicomposting trial (LSVT) methods. Both oyster mushrooms cultivation and vermicomposting of EFB with earthworms enhanced the lignin degradation of EFB. Analysis of total phenolic compounds EFB vermicomposting treated with earthworms showed a decrease in total phenolics concentration from 31.1 GAE/100g extract (raw EFB) to 5.66 g GAE/100g extract (after oyster mushroom cultivation) and to less than 1.5 g GAE/100g extract at the end of vermicomposting. Gas chromatography-mass spectrometry (GC-MS) analysis of the mushroom fruiting body, spent mushrooms, and vermicompost showed no trace of phenolphenol, pyrocatechol, 4-hydrobenzoic acid, or antioxidant and flavonoid phenolics, e.g., phenol, 3,4-dimethoxy-, vanillic acid, and cinnamic acid. This indicates that the mushroom fruiting body is fit for human consumption and the final vermicompost is a useful agricultural product without the detrimental effects of spreading phenolics-loaded EFBs on the land.

## **Author keywords**

Empty fruit bunch, Oyster mushroom, Phenolic compounds, Vermicomposting