

Nutritive composition of oil palm empty fruit bunch fibers treated with mycelia culture of Lingzhi (*Ganoderma lucidum*) as a potential ruminant feedstuff

ABSTRACT

Efforts were made to reduce the wide gap between requirement and availability of local feed by having a better utilization strategy of unconventional feed resources. Malaysia is one of the world's largest palm oil producers. The process of extraction of palm oil produces empty fruit bunch (EFB), which is considered as waste product. Biological delignification using white rot fungi (WRF) was reported to enhance the feeding values of agricultural by-products used in ruminant rations by fungal degradation of lignin. Steam sterilization before fungi inoculation is known to affect substrate composition. Thus, this study was conducted to evaluate the effect of steam sterilization of oil palm EFB fibres on the nutritive composition of oil palm EFB fibres treated with mycelia culture of *Ganoderma lucidum* at different incubation periods as a potential ruminant feedstuff. Shredded oil palm EFB fibres were prepared as sterilized substrate in polypropylene bags and inoculated with mycelia culture of *G. lucidum*. The uninoculated sterilized substrate was compared with unsterilized substrate. All inoculated substrates were incubated starting from week 2, 4, 6, 8, 10 and 12 with 4 replications for each period. All samples were analysed for their nutritive compositions. Result showed that only crude protein and cellulose content were significantly changed after steam sterilization process where crude protein was reduced from 6.07% to 1.97% and cellulose increased from 22.35% to 27.52%. All nutritive composition analysed (dry matter, organic matter, crude protein, ash, cellulose, hemicellulose and lignin) for oil palm EFB fibres treated with *G. lucidum* showed significant changes across incubation period. Its lignocellulose components such as lignin, hemicellulose and cellulose were significantly reduced by 21%, 20% and 35%, respectively after 12 weeks of incubation. These results suggest that oil palm EFB fibres treated with mycelial culture of *G. lucidum* have potential to be utilized as ruminant feedstuff. *Ganoderma lucidum* was proven to have the ability in delignification of lignin in oil palm EFB fibres. Exploitation of this biological treatment could possibly maximize the use of locally available agro-industrial by-products to increase the production of local cost-effective feed for ruminants.

Keyword: Ruminant feed; Feed composition; Oil palm by-product; Empty fruit bunch; *Ganoderma lucidum*