

Enhancing in vitro ruminal digestibility of oil palm empty fruit bunch by biological pre-treatment with *Ganoderma lucidum* fungal culture

ABSTRACT

The changes in lignocellulosic biomass composition and in vitro rumen digestibility of oil palm empty fruit bunch (OPEFB) after pre-treatment with the fungus *Ganoderma lucidum* were evaluated. The results demonstrated that the pre-treatment for 2–12 weeks has gradually degraded the OPEFB in a time-dependent manner; whereby lignin, cellulose, and hemicellulose were respectively degraded by 41.0, 20.5, and 26.7% at the end of the incubation period. The findings were corroborated using the physical examination of the OPEFB by scanning electron microscopy. Moreover, the OPEFB pre-treated for 12 weeks has shown the highest in vitro digestibility of dry (77.20%) and organic (69.78%) matter, where they were enhanced by 104.07 and 96.29%, respectively, as compared to the untreated control. The enhancement in the in vitro ruminal digestibility was negatively correlated with the lignin content in the OPEFB. Therefore, biologically delignified OPEFB with *G. lucidum* fungal culture pre-treatment have the potential to be utilized as one of the ingredients for the development of a novel ruminant forage.