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Biological Treatment of Corn Stover with Pleurotus ostreatus, Pleurotus eryngii and Lentinula edudes to Improve Digestibility

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Abstract : Corn stover is leftover of the leaves, stalk, husks and tassels in the field after harvesting the grain combined. Corn stover is a low-quality roughage but has mostly been used as roughage source for feeding ruminant animals in developing countries including Turkey; however, it can also be used to make biofuels as in developed countries. The objectives of the present study were to improve the digestibility of corn stover by the treatment of white rod fungus mainly Pleurotus osteritus (PO), Pleurotus eryingii (PE) and Lantinula edudes (LE) at different incubation times and also to determine the most effective fungus and incubation time to prepare fermeted corn stover for ruminant nutrition. The choped corn stover was treated with PO, PE and LE and incubated for 10, 20, 30 and 40 days in incubator at 26 0C. After each incubation time dry matter(DM), organic matter(OM), crude protein (CP), neutral detergent fiber (NDF), acid detergent fiber (ADF), neutral detergent lignin (ADL), in-vitro true dry matter digestibility (IVTDMD) and organic matter digestibility (IVTOMD) were determined. The mean IVTDMD and IVTOMD levels were increased by PO, PE and LE treatments in increasing order of incubation times. The obtained IVTDM values were 59.45, 60.51, 60.82 and 60.18 %; 59.45, 70.55, 67.18 and 66.96 %; 59.45, 70.55, 67.18 and 66,96 %; 59.45, 74.90, 69.18 % ; 59.45, 76.50, 71.24 and 73.04 for control, PO, PE and LE treatments at 0, 10, 20, 30 and 40 days incubation times respectively. The obtained IVTOMD values were 56.45,60.26,60.82and 60.18 %; 56.45, 68.70, 67.18 and 66.96 %; 56.45, 71.26, 69.18 and 69.28 %; 56.45, 73.23, 71.24 and 73.04 % for control, PO, PE and LE treatments at 0, 10, 20, 30 and 40 days incubation times respectively. The most effective fungus was PO and the incubation time was 30 days. In conclusion, PO treatment of corn stover with 30 days incubation may be used to prepare fermented corn stover for ruminant nutrition.

Keywords : biological treatment, corn stover, digestibility, Lantinula edudes, Pleurotus eryingii, Pleurotus osteritus
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