

THE EFFECT OF HOMO AND HETERO FERMENTATIVE INOCULANT ON RUMINAL DIGESTIBILITY AND FERMENTATION EVALUATION OF *Ischaemum* sp. GRASS HAYLAGE

Zulfa Jihan Khalifah
21/472757/PT/08792

ABSTRACT

This study evaluated the effects of different lactic acid bacteria (LAB) inoculants on the *in vitro* digestibility and rumen fermentation profile of *Ischaemum* sp. haylage. The *Ischaemum* sp. grass used was harvested at 45 days, sun dried, chopped into 3–5 cm lengths to yield 40 kg, and combined with 8 kg of water to achieve approximately 50% moisture before being ensiled for 28 days. *Ischaemum* sp. haylage was ensiled with two different microbial treatments: *Lactobacillus fermentum* strain BN21 (T1) and *Lactobacillus plantarum* strain FC200 (T2), alongside a control without inoculant (T0). *In vitro* digestibility was tested using the Tilley and Terry method, which was conducted in two separate test runs. In each run, all replicates were analyzed three times. Rumen fluid was sampled for analysis of pH, ammonia, and volatile fatty acids, while the residue was used for dry matter and organic matter digestibility analysis. For other analyses, such as pH, ammonia, and volatile fatty acids, each replicate was analyzed two times. Data were analyzed using analysis of variance (ANOVA) based on a completely randomized design (CRD), with post-hoc testing using Duncan's New Multiple Range Test (DMRT) to identify significant differences between treatments. Significant differences were observed in several parameters including crude protein, shown a higher in the heterofermentative treatment (T2), while ether extract shown a lower in the homofermentative treatment (T1). DMD and OMD were not influenced by the treatments, as no statistical differences were detected. Fermentation characteristics, including pH, ammonia, and total VFA, showed no detectable differences among treatments. However, butyrate concentration varied between treatments ($P < 0.05$), with heterofermentative treatment (T2) at the highest level and homofermentative treatment (T1) at the lowest.

Keywords: *Ischaemum* sp., Haylage, *In vitro* digestibility, Rumen fermentation, Lactic acid bacteria