Influence of probiotics on rumen liquor characteristics and microbiology

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Abstract

The growing concerns attributed to indiscriminate usage of antibiotics has necessitated the search for alternatives. Probiotics has been noted to work synergistically with rumen microbes and improved rumen liquor characteristics. In this study, we investigated the effect of probiotics inclusion on rumen liquor characteristics (physical, chemical and fermentative qualities) and microbiology in WAD goats. In a completely randomised design, eighteen goats were allotted to six dietary treatments: control (D1); antibiotic (D2); 2.5g bakers yeast (D3); 5.0g bakers yeast (D4); 2.5g yeast plus Lactobacilli (D5) and 5.0g yeast plus Lactobacilli (D6), where D5 and D6 were fortified with Lactobacillus acidophilus at 1.00x1012cfu/g each. Rumen liquor was assessed on its colour which was generally brownish green and pH ranged from 6.70 to 6.9. Methyl blue reduction time was highest for D2 (4.83 mins) and the least was observed in D3 and D5 (4.00 mins). Fluid chloride was highest in D3 (49.13 mEq/L) and least was recorded for D6 (34.00 mEq/L). Animals on D6 (62.22 mM) recorded the highest total volatile fatty acids while those on D2 (49.67 mM) had the least. The mixed probiotic (D5 and D6: 7.85 and 8.15 mg/dl) elicited a higher ammonia nitrogen levels that was similar (p > 0.05) with D2 (7.33 mg/dl) but different (p < 0.05) from D1, D4 and D3 (5.91, 4.70 and 4.45 mg/dl). Bacteria count was highest in animals on D5 (233.33 x 106 cfu/mL) and least was seen in those on D2 (129.33 x 106 cfu/mL) while fungi population in animals on D4 (54.00 x 103 cfu/mL) recorded the highest and those on D2 had the least (26.00 x 103 cfu/mL). It was concluded that, fortification of WAD bucks diet with 2.50 g and 5.00 g of yeast and Lactobacilli improved rumen liquor characteristics and microbiology.

Keywords: Bucks, Bakers yeast, Lactobacillus acidophilus, rumen liquor, microbiology