Effect of Supplementation of Grazing Bali Cows During Pre and Postcalving Period on Intake, Digestibility, and Rumen Environment

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Abstract

Ten pregnant Bali cows were used to study effect of supplementation on intake, digestibility, and rumen environment. Approximately 90 days before the expected date of calving, cows were randomly allocated to one of two feeding groups. The 5 cows of Group A were grazed on native pasture, while the remaining cows of Group B grazed with the others but received 1.50 kg concentrate (coconut cake + fish meal + rice bran) with gross energy of native grass = 13.61 kg MJ\(^{-1}\) and concentrate = 16.68 kg MJ\(^{-1}\). Voluntary intake of basal diet and supplemented feeds by both groups was measured over successive 14-day periods including 7 days of preliminary treatment at 1 month after calving, while apparent digestibility was determined at 4–6 weeks after calving, and ruminal fluid was collected on the final day of the trial. Data was analysed using student-t test procedure. Forage intake particularly total dry matter (DM) intake was markedly increased (\(P < 0.01\)) when cows grazed on natural pasture were supplemented with concentrate (7.6 vs 6.0 kg). The estimated total energy intake also increased (\(P < 0.01\)) with supplementation. The intake of all the nutrients i.e. total organic matter (OM), crude protein (CP), ether extract (EE), crude fibre (CF) and nitrogen free extract (NFE) were significantly higher (\(P < 0.01\)) in the supplemented group than in the non-supplemented group. Digestibility data in the study showed that there were improvements after supplementation i.e. DM was significantly higher (66.7 vs 58.3%); also digestibility of all nutrients except EE and NFE. Rumen pH, ammonia and VFA levels were affected by concentrate supplementation (pH: 6.4 vs. 6.7; NH\(_3\)-N: 137.4 vs. 11.0 mg l\(^{-1}\); VFA: 115.2 vs. 86.2 nM l\(^{-1}\)). Molar proportion i.e. acetate, propionate and butyrate including acetate and propionate rati also influenced by supplementation (2.9 vs 3.9).

Keywords: Bali cows, digestibility, intake, native pasture, rumen environment.

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