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Partitioning of Non-Metallic Nutrients in Lactating Crossbred Cattle Fed Buffers

Authors : Awadhesh Kishore

Abstract : The goal of the study was to determine how different non-metallic nutrients are partitioned from feed in various physiological contexts and how buffer addition in ruminant nutrition affects these processes. Six lactating crossbred dairy cows were selected and divided into three groups on the basis of their phenotypic and productive features (374±14 kg LW). Two treatments, T1 and T2, were randomly assigned to one animal from each group. Animals under T1 and T2 were moved to T2 and T1, respectively, after 30 days. T2 was the only group to receive buffers containing magnesium oxide and sodium bicarbonate at 0.0 and 0.01% of LW (the real amounts are equivalent to 75.3±4.0 and 30 7.7±2.0 g/d, respectively). T1 was used as the control. Wheat straw and berseem were part of the base diet, whereas wheat grain and mustard cake were part of the concentrate mixture. Following a 21-day feeding period, metabolic and milk production trials were carried out for seven consecutive days. The Kearl equation used the urine's calorific value to determine its volume. Chemical analyses were performed to determine the levels of nitrogen, carbohydrates, calories, and phosphorus in samples of feed, waste, buffer, mineral mixture, water, feces, urine, and milk that were collected. The information was analyzed statistically. Notable results included decreased nitrogen and carbohydrate partitioning to feces from feed, while increased calorie partitioning to milk and body storage, and increased carbohydrate partitioning to body storage. Phosphorus balance was significantly better in T2. The application of buffers in ruminant diets was found to increase the output of calories in milk, as well as the number of calories and carbohydrates stored in the body, while decreasing the amount of nitrogen in faeces. As a result, it may be advised to introduce buffers to feed crossbred dairy cattle.

Keywords : cattle, Magnesium oxide, non-metallic nutrients, partitioning, Sodium bicarbonate
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