

EFFECT OF SUPPLEMENTATION OF EXOGENOUS MICROBIAL ENZYMES INTO DAIRY COW FEED ON THEIR MILK PRODUCTION

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Although the cattle population in Sri Lanka has a genetic capacity to produce more milk compared to the current production, feed has become a limiting factor. Exogenous microbial enzymes are known to improve feed digestion in monogastric animals. Therefore, a study was conducted to examine the effect of exogenous enzyme supplementation in dairy cow feed, on milk production and composition, in lactating cows in the mid-country of Sri Lanka. Six, Jersey Friesian cross-bred lactating cows at 15±3 weeks in milk (body weights = 455±59 kg) were randomly assigned into two diets: with enzyme supplementation (treatment=T) or without (control=C). Cows in treatment (n=3) were fed a total mix ration (TMR) supplemented with exogenous enzymes: xylanase and phytase at a rate of 0.1 g and 0.2 g, respectively per kilogram of fresh TMR, for 14 days. The control group (n=3) was fed the same feed without enzymes. TMR was fed, at a rate of 3.5% of the body weight, on dry matter basis daily. The experiment was conducted as a randomized crossover design thus, each treatment had six replicates. Data was collected on milk yield, body weight, and body condition score. Further, chemical analyses were conducted on milk and feed composition. Mean milk yield, cow⁻¹ day⁻¹ (5.55±0.14 L) was significantly increased ($p<0.05$) in enzyme-supplemented cows when compared to the cows fed without enzyme (5.00±0.14 L). The increase in the average milk yield was 11%. However, no significant difference ($p>0.05$) in milk fat (T=2.69±0.87%, C=3.14±0.87%), solids non-fat (T=8.18±0.23%, C=8.07±0.23%), body weight gain and body condition scores of the cows fed with or without exogenous enzymes. In conclusion, supplementation of exogenous enzymes; xylanase and phytase increases milk production but does not alter milk composition of lactating dairy cows in mid-country, Sri Lanka. Further research is needed to decide the optimum rate of enzyme supplementation.

Keywords: Exogenous enzymes, Milk composition, Milk yield, Phytase, Xylanase