

Impact of Probiotic and Yeast Extract Supplementation on Metabolic Parameters and Liver Functioning Index in Dairy Cattle During Transition

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Abstract : Several studies have shown that the liver is vulnerable to detrimental alterations characterized by functional and morphological changes during the transitional period. Probiotic supplementation is pivotal in enhancing metabolic functions by orchestrating a harmonious equilibrium within the intestinal microbial community, thereby averting gastrointestinal infections and elevating the overall well-being, growth, and performance of ruminants. This study was designed to evaluate the impact of probiotic and yeast cell wall extract (YCW) supplementation on metabolic and hepatic functions during the transitional period. A cohort of forty dry cows was randomly divided into four groups, namely the probiotic group (Pr) receiving a basal diet combined with a blend of *Bacillus subtilis*, *Bacillus lechiformis*, *Streptococcus Thermophilis*, and *Enterococcus faecium*; the YCW group receiving a basal diet enriched with *Saccharomyces cerevisiae*; the probiotic and yeast cell wall extract group (P & Y) receiving a basal diet supplemented with a mixture of probiotic and yeast cell wall extract; and the control group adhering to the basal diet. The intervention was initiated 21 days before calving and persisted until 28 days post-calving, except for the control group. The study entailed the collection of blood samples at four sampling times, encompassing 21 days preceding calving, seven days before calving, seven days post-calving, and four weeks post-calving. Multiple biochemical parameters were assessed, including urea, blood urea nitrogen (BUN), Gamma-glutamyl transferase (GGT), total bilirubin (TB), albumin, total protein (TP), globulin, glucose, triglyceride, cholesterol, and liver functionality index. The results showed that the Pr group exhibited reduced average levels of urea, BUN, triglycerides, and GGT compared to the control group ($P > 0.05$). Similarly, the YCW group demonstrated lowered average BUN, TB, and cholesterol levels than the control group ($P > 0.05$). Notably, the liver functionality index exhibited a discernible trend towards elevation in the Pr group compared to the control group ($P = 0.06$) and the P & Y group ($P = 0.007$). In essence, the supplementation of YCW and probiotics is associated with advantageous effects on metabolic parameters and liver functionality.

Keywords : dairy cattle, probiotic, yeast extract supplement, liver functionality index, transition period

Conference Title : ICASV 2025 : International Conference on Animal Sciences and Veterinary

Conference Location : Toronto, Canada

Conference Dates : February 10-11, 2025