

CONSTRUINDO SABERES, FORMANDO PESSOAS E TRANSFORMANDO A PRODUÇÃO ANIMAL

EFFECTS OF PREBIOTIC SUPPLEMENTATION ON GUT HEALTH, CELLULAR IMMUNE FUNCTION AND PERFORMANCE OF DAIRY CALVES

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Abstract: The commensal gut microbiota plays an important role for the host. Many carbohydrates from yeast cell wall, such as mannanoligosaccharides and purified beta-glucans are used in livestock nutrition. The first as gut prebiotic, acting as substrates for beneficial bacteria in the gut and the second as immune response enhancers. This study aimed to evaluate if Prowean Rumi[®] (PWR; Biorigin, Brazil) – a new generation of functional carbohydrates from yeast cell wall – is able to modulate the gut environment and enhance cellular immune function. The study was performed at University of Louisville, Kentucky. A total of 30 dairy calves with 20 days of age were randomly and equally assigned to 2 treatments: 1) Control (n = 15), no supplementation; 2) PWR (n = 15), fed 100 mg kg⁻¹ of body weight added to milk during 28 days. The body weights were recorded weekly to quantify the average daily gain (ADG). At the end of experiment peripheral blood sample were collected and assays employing phagocytosis of synthetic polymeric microspheres were carried as described by Vetvicka et al. (2014). Short-chain fatty acids (SCFA) in feces were measured by PCR at the last day of experiment. Data were analyzed by ANOVA using the PROC MIXED of SAS 9.1 with fixed dietary effect, time effect, interaction between diet and time. Our results showed that addition PWR potentiated phagocytic activity (P<0.05) of peripheral blood monocytes (21.8 vs. 24.6%) and neutrophils (25.4 vs. 28.9%) and increased (P<0.05) SCFA concentration (105.5 vs. 111.5 mMol/L) in feces compared with control animals, demonstrating prebiotic effect and a more efficient immune response. Moreover, calves supplemented with PWR showed higher (P<0.05) ADG and final body weight compared with control animals, demonstrating that modulation of the intestinal environment can result in higher absorption of nutrients. In conclusion, Prowean Rumi[®] can improve gut health, cellular immune function and performance of dairy calves.

Keywords: gut health, prebiotic, short-chain fatty acids

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