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"Solidarity in a competing world — fair use of resources"

Immune Response and Milk Production of Ewes Fed Salt Tolerant Forages as a Replacement of Berseem Hay

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Abstract

The comparative evaluation of different, less-well researched forages will yield promising candidates to overcome the limitations of feed sources in most sub-tropic areas during drought and may enhance the immune response and milk production as well. Diets substitution of berseem (*Trifolium alexandrinum*) hay by leaves of cassava (*Manihot esculenta*), acacia (*Acacia saligna*) or atriplex (*Atriplex nummularia*) were evaluated using forty late pregnant Barki ewes (43.2 ± 1.1 kg body weight). Ewes were divided into four experimental diets (n=10 each): control (per kg DM 600 g concentrate and 400 g berseem hay) or substitute forage diets (per kg DM 600 g concentrate and 400 g leaves of cassava, acacia or atriplex). Samples of dam colostrum and their lamb blood serum were taken at 2, 6, 12, and 24 h after parturition while milk production composition and serum biochemical parameters were measured at one week postpartum and lasted for 8 weeks. Cassava based diet increased ($p < 0.05$) colostrums IgG and IgM concentrations compared with control. Atriplex and cassava based diets enhanced ($p < 0.01$) the concentrations of lamb serum IgM compared with control. Colostrum and lamb serum IgG and IgM concentrations were synchronised recorded the highest ($p < 0.01$) levels at 2 h after parturition then decreased dramatically ($p < 0.01$) to reach the lowest concentrations after 24 h for all treatments. Milk yield was enhanced ($p < 0.01$) by cassava diet and milk protein, lactose, density, ash and solid not fat were increased ($p < 0.05$) by substitute forage diets compared with control. Either acacia or atriplex decreased ($p < 0.01$) glucose concentrations while cassava had greater ($p < 0.05$) serum total protein and the lowest triglycerides concentration when compared to control. Cassava increased ($p < 0.05$) lambs weaning weights and daily weight gain compared to other treatments. It could be concluded that cassava, atriplex and acacia are valuable alternatives to berseem hay in lactating Barki ewe diets without compromising immunity and milk production, among the experimental forages, cassava was more effective than acacia and atriplex.

Keywords: Immune response, lamb performance, milk yield, salt tolerant forages

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