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Forage quality in ewe diets determines fatty acid profile and lipogenic gene expression in *Longisimus dorsi* of suckling lambs

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The aim of this study was to investigate whether forage quality in ewe diets affects IMF fatty acid profile and the expression of genes related with fat metabolism in l. dorsi muscle from Churra Tensina sheep breed. The effect of ewe diet on the expression of some lipogenic (LPL, ACACA, FASN, FABP4, DGAT1, SCD, PRKAA2), and transcription factors genes (SREBP1, PPARG, PPARA and CEBPB) was also studied. Twenty-four lambs were used for IMF fatty acid profile determination and gene expression studies: HAY group lambs (n=12) and GRE group lambs (n=12) were raised by ewes receiving meadow hay and grazing green forage, respectively. When lambs reach 10-12 kg live weight were slaughtered and sample of l. dorsi was used for IMF fatty acid profile and gene expression studies. The fatty acids profile and gene expression levels were determined. Statistical analysis were carried out using the SPSS 15.0, using GLM. The relationship between gene expression and FA indicators was determined using stepwise linear regression analysis. GRE lambs promoted the formation and deposition of vaccenic (C18:1 n-7), CLA and PUFA n-3 in L. dorsi from their suckling lambs (P<0.05). Significant statistical differences were found in SCD gene expression (P=0.04), and CEBPB was at the limit of significance (P=0.05). Relative gene expression of SCD was 0.22 lower in lambs from GRE group compared to HAY group. While CEBPB gene expression was 1.31- fold higher in GRE group compared to HAY group. Regression analysis showed that SCD and CEBPB gene expression in suckling lambs are modulated by PUFA n-6/ n-3 ratio. Higher levels of n-6/n-3 stimulate SCD expression and inhibited CEBPB gene expression in HAY group lambs.

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Effects of mannanoligosaccharide–β glucan or antibiotics on health and performance of dairy calves

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Twenty-four newborn Holstein calves (initial body weight at birth = 40±3.0 kg) were used to study the effects of mannanoligosaccharide–β glucan (MOS-β glucan) or antibiotics on health and performance. Calves were assigned randomly to one of three treatments. Treatments included: whole milk with no additives (control), whole milk containing MOS-β glucan at 4 g per meal, whole milk containing antibiotic at 500 mg of oxytetracycline/d. Calves received whole milk twice daily. Water and starter were offered for ad lib intake throughout the trial of 56 days. Body weight was measured at birth and thereafter weekly till 8 wk of age. Starter intake was measured daily. Fecal scores were monitored 3 times per week. Blood samples were collected at 3, 7, 15, 30, 45 and 56 days, and analyzed for total protein, blood urea N, albumin and ratio albumin:globulin. Analysis of weekly dry matter intake (DMI) revealed no significant difference from week 1 to 7 among the treatments. The calves fed MOS-β glucan or antibiotic had greater (P<0.05) DMI than control at week 8. Furthermore, at week 8 average daily gain (ADG) was significantly greater (P<0.01, SE 36 g/d) for MOS-β glucan (1024 g/d) and antibiotic groups (1,014 g/d) compared with control group (791 g/d). When the entire study period was evaluated, it was observed that calves fed MOS-β glucan had lower (P<0.05, SE 0.03) fecal score (1.35) than control (1.54) and antibiotic (1.54) treatments. No treatment differences in feed efficiency and blood samples were detected during the trial. This study showed that MOS-β glucan can be a substitute for antibiotic as a supplement for calf growth.