Short Communication

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Journal of Molecular science

2021
Vol. No. S2

Influence of dietary selenium supplementation on fermentation pattern and morphology in rumen of goat fed high concentrate diet

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Abstract

The present study investigated the fermentation pattern and morphological characteristics of rumen in goats fed high concentrate diet with or without selenium supplementation. A total of fifteen young goats were divided into three dietary groups, viz. LC, HC and HCS with 5 animals in each group either fed low concentrate (LC, roughage: concentrate ratio 65:35), high concentrate (HC, 35:65) or HC plus Se (HCS) diets.Se was supplemented as selenium yeast at the dose rate of 0.3 mg Se/kg of diet. The experiment lasted for 10 weeks. Ruminal fluid and tissue samples were collected for analysis of fermentation pattern and histomorphometry.The fermentation pattern showed an increase in molar concentrations of acetate, propionate and butyrate in both HC and HCS groups compared to LC except for acetate that significantly decreased ($P < 0.05$) in HCS compared to HC. The drop in ruminal fluid pH was highly significant ($P < 0.005$) in HC fed than that of HCS fed ($P < 0.05$) goats compared to LC. Histomorphometric analysis showed severe damage concurrent with significant decrease in antioxidant enzymes in rumen epithelium of HC-fed goats compared to control, however, the selenium supplementation in HCS goats ameliorated the damaging effects of HC diet. The results of present study suggests that HC diet alters fermentation pattern and induces epithelial damage by increasing oxidative stress and the selenium supplementation ameliorates HC diet-induced epithelial damage in rumen of goat.

Citation : Rajoo Mal Menghwar; Influence of dietary selenium supplementation on fermentation pattern and morphology in rumen of goat fed high concentrate diet,London,UK, April 21st, 2021.