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硫胺素对亚急性瘤胃酸中毒状态下山羊瘤胃发酵特性的影响

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Effects of Thiamin on Rumen Fermentation Characteristics in Goats Suffered from Subacute Ruminal Acidosis

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摘要 本试验旨在研究硫胺素对亚急性瘤胃酸中毒(SARA)状态下山羊瘤胃发酵特性的影响。选用6只1～2岁装有永久性瘤胃瘘管、身体健康的徐淮山羊为试验动物,分为试验组和对照组,每组3只,采用逐渐提高饲粮精粗比的方式诱导发生SARA。试验动物处于SARA状态后,试验组饲粮中添加240 mg/kg硫胺素。结果表明:饲粮中添加硫胺素提高了瘤胃液pH;饲粮中添加硫胺素显著或极显著降低了乳酸(4～8 h)和乙酸的浓度(0～12 h)以及乙酸/丙酸(0～12 h)($P<0.05$或$P<0.01$),显著或极显著提高了丙酸(0～12 h)与丁酸的浓度(0、6、9 h)($P<0.05$或$P<0.01$);饲粮中添加硫胺素显著或极显著降低了各时间点组胺浓度($P<0.05$或$P<0.01$),但未使除6 h外的内毒素浓度发生显著变化($P>0.05$),显著或极显著提高了各时间点瘤胃液硫胺素浓度($P<0.05$或$P<0.01$),显著或极显著降低了硫胺素酶的活性(0、6、9 h)($P<0.05$或$P<0.01$)。结果提示,饲粮中添加240 mg/kg硫胺素能够改善SARA状态下瘤胃内环境,缓解山羊SARA。

关键词: 硫胺素 亚急性瘤胃酸中毒 瘤胃发酵 山羊

Abstract: The effects of thiamin on the rumen fermentation characteristics in goats suffered from subacute ruminal acidosis (SARA) were studied. Six healthy *Xuhuai* goats aged 1 to 2 years and fixed with permanent fistulas were divided into two groups with 3 goats in each group. SARA of goats was induced by a feeding regime of gradual increasing dietary ratio of concentrate to forage. After SARA occurs, 240 mg/kg thiamin was added in the diet of experimental group. The results showed that the supplementation of thiamin increased rumen fluid pH; the concentrations of lactate (4 to 8 h), acetate (0 to 12 h) and acetate/propionate (0 to 12 h) were significantly decreased ($P<0.05$ or $P<0.01$), while the concentrations of propionate (0 to 12 h) and butyrate (0, 6 and 9 h) were significantly increased ($P<0.05$ or $P<0.01$); thiamine concentration in rumen fluid at all the time points was significantly decreased ($P<0.05$ or $P<0.01$), while endoxin concentration in rumen fluid was not significantly affected at all the time points excepted for 6 h ($P>0.05$); thiamin concentration in rumen fluid was significantly increased at all the time points ($P<0.05$ or $P<0.01$), while the activity of thiaminase was significantly decreased ($P<0.05$ or $P<0.01$). It is concluded that the supplementation of 240 mg/kg thiamin in diets for goats during SARA period can improve the conditions of rumen internal environment, which results in the release of SARA.

Keywords: thiamin, subacute ruminal acidosis, rumen fermentation, goats

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