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## 莫能菌素和吐温80对生长期草原红牛瘤胃发酵特性及甲烷排放的影响

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## Effects of Monensin and Tween-80 on Rumen Fermentation and Methane Emission of Growing Grassland Red Bulls

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**摘要** 本试验旨在研究莫能菌素和吐温80对生长期草原红牛瘤胃发酵特性及甲烷排放的影响。选择17月龄、体重相近[(276±18) kg]的生长期草原红牛公牛8头,采用4×4拉丁方试验设计,试验牛随机分为4组,每组2头。分别饲喂基础饲料以及在基础饲料中分别添加0.36 g/d莫能菌素、1.75 g/d吐温80、0.36 g/d莫能菌素+1.75 g/d吐温80的试验饲料。结果表明:饲料中添加莫能菌素能极显著增加草原红牛瘤胃液总挥发性脂肪酸浓度与丙酸比例( $P<0.01$ ),增重1 kg的甲烷排放量降低了31.89%;饲料中添加吐温80能增加草原红牛瘤胃液总挥发性脂肪酸浓度和丙酸比例,但差异不显著( $P>0.05$ ),增重1 kg的甲烷排放量降低了22.59%;饲料中联合添加莫能菌素和吐温80的效果没有比分别添加二者的效果增强。因此,饲料中分别添加莫能菌素或吐温80均能促进草原红牛瘤胃发酵,并显著降低单位增重的甲烷排放量,有利于提高饲料养分的消化利用效率。

**关键词:** 莫能菌素 吐温80 草原红牛 瘤胃发酵 甲烷排放

**Abstract:** This experiment was conducted to research the effects of monensin and tween-80 on the characteristics of rumen fermentation and methane ( $CH_4$ ) emission of growing Grassland Red bulls. Eight healthy Grassland Red bulls with an average age of seventeen months and an average body weight of (276±18) kg was selected and randomly divided into four groups with two heads in each group in a 4×4 Latin square design. Bulls were fed a basal diet and three experimental diets (the basal diet supplemented with 0.36 g/d monensin, 1.75 g/d tween-80 and 0.36 g/d monensin+1.75 g/d tween-80, respectively). The results showed as follows: dietary supplementation of monensin significantly increased the concentration of total volatile fatty acid (TVFA) and the proportion of propionate propionic acid, but reduced  $CH_4$  emission per kilogram of weight gain by 31.89%; dietary supplementation of tween-80 tended to increase TVFA concentration and propionate proportion ( $P>0.05$ ), but reduced  $CH_4$  emission per kilogram of weight gain by 22.59%; compared with supplemented individually, the influence was not enhanced when monensin and tween-80 were supplemented together. Therefore, monensin and tween-80 can both improve rumen fermentation, but significantly reduce  $CH_4$  emission per unit of weight gain, which are beneficial for nutrient digestion and utilization.

**Keywords:** monensin, tween-80, Grassland Red bulls, rumen fermentation,  $CH_4$  emission

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