



## 不同释放速度瘤胃调控剂对瘤胃亚急性酸中毒体外发酵参数的影响

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### Effect of Different Release Rate of Rumen Modulators on Fermentation Characteristics in vitro Induced by SARA

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- 摘要
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**摘要** 本试验通过在体外构建瘤胃亚急性酸中毒(SARA)模型, 来研究不同释放速度的瘤胃调控剂对SARA体外发酵特性及牛链球菌数量的影响。选取3头育肥期并安装永久性瘤胃瘘管的宣汉黄牛, 于晨饲2 h后采集瘤胃内容物, 滤液作为体外发酵液的接种物, 通过添加玉米与白酒糟(1:1)的方式诱导体外发生SARA。借助于构建成功的SARA体外模型, 设置4个试验处理: 对照组、6 h完全释放组、8 h完全释放组和10 h完全释放组。在诱导SARA之后的0、2、4、6、8、10、12 h取样测定瘤胃各发酵指标及牛链球菌的相对数量。结果表明, 与对照组相比, 各试验组瘤胃液pH均极显著升高 ( $P<0.01$ ), 乙酸、丙酸、丁酸、乳酸和总挥发性脂肪酸 (total volatile fatty acids, TVFA) 浓度也显著降低 ( $P<0.05$ )。结果显示, 8 h完全释放组不仅有效提高了瘤胃液pH, 缓解了SARA状态, 还对稳定瘤胃液环境和促进微生物的生长有显著效果。

**关键词:** 瘤胃调控剂 释放速度 瘤胃亚急性酸中毒 发酵参数

**Abstract:** The aim of this study was to evaluate the effect of different release rate of rumen modulators on fermentation characteristics and *S. bovis* number in vitro by the means of induced by subacute rumen acidosis (SARA) model. Three Xuanhan steers fitted with permanent ruminal cannulas were used and SARA was induced by adding corn and fresh distilled grain(1:1). Then this experiment was divided into 4 groups: 6 h release group, 8 h release group, 10 h release group and the control group. The samples were taken at 0,2,4,6,8,10 and 12 h after the SARA model was induced and the rumen fermentation parameters were determined and *S. bovis* number was quantitated using 16S rRNA oligonucleotide probe hybridization. The results showed that pH in all trial groups were significantly increased compared with that in the control group ( $P<0.01$ ), and ruminal acetate, propionate, butyrate and TVFA concentrations were significantly decreased ( $P<0.05$ ), while ruminal lactate content decreased significantly ( $P<0.05$ ). The results indicate 8 h release group can effectively reduce pH, promote the growth of microorganisms and improve the rumen fermentation. [Chinese Journal of Animal Nutrition, 2011, 23 (9) : 1608 - 1614]

**Keywords:** rumen modulator, release rate, SARA, fermentation characteristics

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