



## 过瘤胃保护性亮氨酸对绵羊骨骼肌哺乳动物雷帕霉素靶蛋白(mTOR)信号传导通路关键因子的影响

桑丹<sup>1</sup>, 孙海洲<sup>1\*</sup>, 郭俊清<sup>2</sup>, 赵存发<sup>3</sup>

(1. 内蒙古农牧业科学院动物营养研究所, 呼和浩特 010030; 2. 呼和浩特市新特瑞饲料有限公司, 呼和浩特 010072; 3. 内蒙古农牧业科学院, 呼和浩特 010031)

### Effects of Rumen-protected Leucine on the Key Factors Controlling mTOR Signal Transduction Pathway in the Skeletal Muscle of Sheep

SANG Dan<sup>1</sup>, SUN Haizhou<sup>1\*</sup>, GUO Junqing<sup>2</sup>, ZHAO Cunfa<sup>3</sup>

(1. Institute of Animal Nutrition, Inner Mongolian Academy of Agriculture and Animal Science, Hohhot 010030, China; 2. Hohhot Xinterui Feed Co., Ltd., Hohhot 010072, China; 3. Inner Mongolian Academy of Agriculture and Animal Science, Hohhot 010031, China)

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**摘要** 本试验旨在研究过瘤胃保护性亮氨酸对绵羊骨骼肌哺乳动物雷帕霉素靶蛋白(mTOR)信号传导通路中2个关键因子4E-BP1及p70S6K磷酸化的影响。试验选取绵羊12只, 随机分为4组(每组3个重复, 每个重复1只羊), 分别饲喂在基础饲料中添加0(对照组)、0.5、1.0和1.5 g/d过瘤胃保护性亮氨酸的饲料。15 d后, 将绵羊屠宰, 取背最长肌通过蛋白质免疫印迹法来测定4E-BP1和p70S6K的磷酸化程度。结果表明: 与对照组相比, 各添加组的4E-BP1和p70S6K磷酸化灰度值均显著升高(P<0.05), 且以添加量为1.0 g/d时4E-BP1和p70S6K的磷酸化程度最高, 分别为0.40%和0.85%。由此得出, 饲料中添加过瘤胃保护性亮氨酸可以促进绵羊骨骼肌mTOR信号传导通路中2个关键因子4E-BP1和p70S6K的磷酸化, 且添加量以1.0 g/d为宜。

**关键词:** 过瘤胃保护性亮氨酸; 绵羊; 骨骼肌; mTOR

**Abstract:** The purpose of this experiment was to study the effects of rumen-protected leucine on the phosphorylation of two key factors (4E-BP1 and p70S6K) of mammalian target of rapamycin (mTOR) signal transduction pathway in the skeletal muscle of sheep. Twelve sheep were randomly allotted to 4 groups (with 3 replicates per group and 1 sheep per replicate), and fed basal diet supplemented with 0 (control group), 0.5, 1.0 and 1.5 g/d rumen-protected leucine, respectively. After 15 days, the sheep were slaughtered and the 4E-BP1 and p70S6K phosphorylation degrees in longissimus muscle were determined by Western blot technique. The results showed as follows: compared with the control group, gray values of 4E-BP1 and p70S6K phosphorylation in rumen protected leucine groups were increased (P<0.05), and the highest values were all found in 1.0 g/d group which were 0.40% and 0.85%, respectively. Therefore, dietary rumen-protected leucine supplementation can improve the phosphorylation of two key factors (4E-BP1 and p70S6K) in mTOR signal transduction pathway in the skeletal muscle of sheep, and the suitable level is 1.0 g/d. [Chinese Journal of Animal Nutrition, 2011, 23 (1) : 61-65]

**Keywords:** rumen-protected leucine; sheep; skeletal muscle; mTOR

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