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饲料不同NFC/NDF对肉用绵羊瘤胃pH、氨态氮和挥发性脂肪酸的影响

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Effects of Dietary NFC/NDF Ratios on Rumen pH, NH₃-N and VFA of Meat Sheep

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摘要 本试验旨在研究饲料不同非纤维性碳水化合物/中性洗涤纤维(NFC/NDF)对肉用绵羊瘤胃pH、氨态氮和挥发性脂肪酸的影响。选用(47.21±1.01) kg安装有瘤胃瘘管的杜泊羊(♂)×小尾寒羊(♀)杂交1代肉用公羊12只,采用12×4不完全拉丁方设计,试验分4期进行,每期16 d,分别饲喂NFC/NDF为0.25、0.34、0.36、0.52、0.60、0.80、0.87、1.13、1.30、1.58、2.17和2.49的12种饲料。结果表明:随着NFC/NDF的增加,试验羊瘤胃pH极显著线性降低($P<0.01$),氨态氮浓度极显著线性增加($P<0.01$),瘤胃总挥发性脂肪酸及丁酸比例呈显著三次曲线变化($P<0.05$),总挥发性脂肪酸中的丙酸、戊酸和异戊酸比例极显著线性增加($P<0.01$),乙酸比例和乙酸/丙酸极显著线性降低($P<0.01$)。由此可见,饲料NFC/NDF对瘤胃pH、氨态氮和挥发性脂肪酸具有显著影响。

关键词: 非纤维性碳水化合物 pH 氨态氮 挥发性脂肪酸 绵羊

Abstract: This experiment was conducted to study the effects of dietary non-fiber carbohydrate to neutral detergent fiber (NFC/NDF) ratios on rumen pH, ammonia-N (NH₃-N) and volatile fatty acid (VFA) of meat sheep. Twelve rumen-cannulated crossbred (Dorper ♂×Thin-tailed Han ♀) rams with body weight of (47.21±1.01) kg were divided into 12 groups (4 trial periods) and each period lasted for 16 days according to a 12×4 uncompleted Latin square experimental design. The rams were fed rations with different NFC/NDF ratios, which were 0.25, 0.34, 0.36, 0.52, 0.60, 0.80, 0.87, 1.13, 1.30, 1.58, 2.17 and 2.49, respectively. The results showed that with the increasing of NFC/NDF ratios, rumen pH was significantly linear decreased ($P<0.01$), rumen NH₃-N was significantly linear increased ($P<0.01$), total volatile fatty acid (TVFA) and butyrate percent were changed obviously with cubic curve ($P<0.05$), percent of propionate, valerate and isovalerate in rumen were significantly linear increased ($P<0.01$), while acetate percent and acetate/propionate ratio were significantly linear decreased ($P<0.01$). These results indicate that dietary NFC/NDF ratios have significant effects on rumen pH, NH₃-N and VFA.

Keywords: NFC, pH, NH₃-N, VFA, sheep

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