



## 不同NFC/NDF比对奶山羊瘤胃微生物及瘤胃pH变化的影响

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## Effects of Different Dietary NFC/NDF Ratios on Ruminal Microorganisms and pH in Dairy Goats

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**摘要** 本试验研究了在不同非纤维性碳水化合物/中性洗涤纤维(NFC/NDF)比饲料条件下诱发奶山羊亚急性瘤胃酸中毒(subacute ruminal acidosis, SARA)过程中瘤胃微生物区系和瘤胃pH的变化。选用6只安装了永久性瘤胃瘘管的泌乳期奶山羊为试验动物,采用自身对照试验法,共分4期进行,每期10 d,依次饲喂NFC/NDF比为1.02(I期)、1.24(II期)、1.63(III期)、2.58(IV期)的4种饲料,以逐渐增加精料的方法诱导奶山羊SARA。结果表明:随着NFC/NDF比的增大,瘤胃pH显著降低(P<0.05),并且瘤胃pH下降幅度也随之加快;随着NFC/NDF比的增大,淀粉分解菌的数量增幅最显著(P<0.01),NFC/NDF比为1.63时,瘤胃细菌总数、乳酸杆菌及坏死梭形杆菌的数量显著增加(P<0.05),当该比值为2.58时,埃氏巨型球菌和反刍兽新月单胞菌的数量出现显著增多(P<0.05);原虫数量在IV期降至最低,而牛链球菌的数量在整个试验期并未出现明显的波动。饲料NFC/NDF比为1.63时,瘤胃内与碳水化合物分解有关的多数细菌的数量明显增加,SARA期时增幅更为明显,而此时原虫数量为最低。

**关键词:** NFC/NDF比;亚急性瘤胃酸中毒;瘤胃微生物;瘤胃pH

**Abstract:** This experiment was conducted to investigate the effects of different dietary NFC/NDF ratios on ruminal microorganisms and pH in dairy goats under subacute ruminal acidosis (SARA). In this self controlled study, six rumen-cannulated Guanzhong lactating dairy goats were selected and self-control method was used. The experiment was carried out for 4 periods with 10 d each period. The goats were fed diets with different NFC/NDF ratios, which were 1.02 (period I), 1.24 (period II), 1.63 (period III) and 2.58 (period IV), respectively. Meanwhile, subacute ruminal acidosis (SARA) was induced by the gradually increasing concentrate. The results showed as follows: the ruminal pH decreased significantly with the increasing of dietary NFC/NDF ratios (P<0.05), and the decreasing scale increased; the number of amylolytic bacteria increased remarkably with the gradually increasing dietary NFC/NDF ratios (P<0.01), the number of ruminal total bacterial, Lactobacillus and Fusobacterium necrophorum increased significantly when the ratio was 1.63 (P<0.05), and the number of Megasphaera elsdenii and Selenomonas ruminantium increased significantly when the ratio was 2.58 (P<0.05); the number of total ciliates dropped to the lowest in period IV, but the populations of Streptococcus bovis did not change obviously (P>0.05). The results indicate that when the NFC/NDF ratio is 1.63, the majority of rumen bacteria which related to the decomposition of carbohydrates increases obviously, especially during SARA period, but the population of total ciliates falls to the lowest. [Chinese Journal of Animal Nutrition, 2011, 23 (4) : 597 -603]

**Keywords:** NFC/NDF ratios; SARA; ruminal microorganisms; ruminal pH

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