



代乳粉的饲喂水平对犊牛消化代谢及血清生化指标的影响

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Effects of Feeding Levels of Milk Replacer on Digestion, Metabolism and Serum Biochemical Indices in Calves

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摘要 本试验旨在研究代乳粉的饲喂水平对犊牛生长、增重、营养物质消化吸收及血清生化指标的影响。选择体重相近的新生犊牛24头, 随机分成3个处理, 每个处理8个重复, 每个重复1头牛, 单笼饲养。代乳粉的饲喂水平依次为犊牛体重的1.188% (L组)、1.375% (M组) 和1.563% (H组), 分别在第0、2、4、6、8周称重、采血, 于第3~4周和第5~6周进行代谢试验。结果表明, M组和H组犊牛每周增重在3~4周龄阶段显著高于L组 ($P<0.05$), 在其他阶段, 代乳粉的饲喂水平对犊牛每周增重有一定的影响, 但差异不显著 ($P>0.05$)。在3~4周龄阶段, L组犊牛的干物质和有机物的消化率显著高于H组 ($P<0.05$), M组犊牛的粗蛋白质消化率显著高于H组 ($P<0.05$), 但3个处理犊牛的粗脂肪、钙和总磷消化率无显著性差异 ($P>0.05$); 在5~6周龄阶段, M组犊牛的干物质、有机物和钙消化率显著高于H组 ($P<0.05$), 3个处理犊牛的粗蛋白质、粗脂肪和总磷消化率差异不显著 ($P>0.05$)。血清生化指标受周龄影响较大, 在2周龄阶段, L组和M组犊牛的血清白蛋白浓度显著高于H组 ($P<0.05$), H组犊牛的血清甘油三酯浓度显著高于L组 ($P<0.05$), M组犊牛的血清尿素氮浓度显著高于L组 ($P<0.05$), 其他周龄阶段饲喂水平对其没有显著影响 ($P>0.05$)。由此可见, 代乳粉的饲喂水平对犊牛增重、营养物质的消化代谢及血清生化指标均有不同程度的影响, 代乳粉的适宜饲喂水平为犊牛体重的1.375%。

关键词: 代乳粉; 饲喂水平; 消化代谢; 血清生化指标; 犊牛

Abstract: This experiment was conducted to investigate the effects of feeding levels of milk replacer on growth, body weight gain, digestion and absorption of nutrients, and serum biochemical indices in calves. Twenty four newborn calves with similar body weight were allotted into 3 treatments with 8 replicates each and 1 calf in each replicate. The calves were raised in single cages. Each treatment was fed milk replacer at a level of 1.188% (group L), 1.375% (group M) or 1.563% (group H) of the body weight. Body weight was measured and blood samples were collected at 0, 2, 4, 6 and 8 weeks of age. The metabolism trials were conducted during 3 to 4 and 5 to 6 weeks of age, respectively. The weekly weight gain of calves from either group M or H were significantly higher than that of group L ($P<0.05$) during 3 to 4 weeks of age, but it did not significantly differ among the 3 groups ($P>0.05$) in other stages, and the feeding levels of milk replacer had a positive effect on body weight. During 3 to 4 weeks of age, the digestibility of dry matter and organic matter was significantly higher in calves from group L than those from group H ($P<0.05$), and the digestibility of crude protein was significantly higher in calves from group M than those from group H ($P<0.05$), but the digestibility of ether extracts, calcium and total phosphorus was not significantly differ among the 3 groups ($P>0.05$). During 5 to 6 weeks of age, the digestibility of dry matter, organic matter and calcium was significantly higher in calves from group M than those from group H ($P<0.05$), but that of crude protein, ether extracts and total phosphorus was not significantly differ among the 3 groups ($P>0.05$). The serum biochemical indices were influenced by the weeks of age, and the feeding level did not differ among the 3 groups ($P>0.05$). At 2 weeks of age, the concentration of serum albumin was significantly higher in calves from either group L or group M than those from group H ($P<0.05$), the concentration of serum triglyceride in group H was significantly higher than that in group L ($P<0.05$), and the serum urea nitrogen concentration in group M was significantly higher than that in group L ($P<0.05$). The results indicate that milk replacer has effects of varying degrees on the body

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weight gain, digestion and metabolism of nutrients, and serum biochemical indices in calves. It is feasible for calves when milk replacer is fed at a level of 1.375% of the body weight. [Chinese Journal of Animal Nutrition, 2011, 23 (4) : 654 -661]

Keywords: [milk replacer](#); [feeding level](#); [digestion and metabolism](#); [serum biochemical indices](#); [calves](#)

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