



基于T型套管瘘术的鸡小肠食糜流量变异规律的研究

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A Study on the Variation of Intestinal Digesta Flow in Layer-type Cockerels Fitted with T-shaped Cannula

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摘要 本试验旨在通过研究鸡十二指肠、空肠、回肠套管中食糜、食糜干物质、肠液及肠液总蛋白流量的日内及日间变异, 探讨以T型套管获取鸡肠道食糜样品的生物学特性, 为鸡体外模拟消化方法的建立提供参考。采用3×6(日期×时间)完全随机设计, 从健康的35只十二指肠、32只空肠及33只回肠荷术鸡中分别随机选取15只试验鸡, 每组荷术鸡随机分成5个重复, 每个重复3只鸡。术后第31天、第34天、第37天每4 h采集1次食糜, 每采集1 h后间隔3 h。测定通过T型套管获得的食糜、食糜干物质、肠液及肠液总蛋白的流量。结果表明, 荷术鸡的体重在术后25 d与术前无显著差异 (P>0.05), 术后120 d试验鸡健康正常的比例约为80%。肠段不同部位安装T型套管的试验鸡在术后恢复上无显著差异 (P>0.05)。在沿十二指肠、空肠和回肠的纵向长度上, 食糜、食糜干物质及肠液流量依次降低。日内采样时间对十二指肠、空肠、回肠套管内食糜、食糜干物质、肠液及肠液总蛋白流量有显著影响 (P<0.05)。在不同采样日间的差异上, 十二指肠套管内食糜、食糜干物质及肠液流量, 空肠套管内食糜、肠液及肠液总蛋白流量有日间差异 (P<0.05)。由此可知, 荷术鸡经25 d可完全康复, 利用时限在4个月以上。在自由采食、自然光照条件下, 鸡小肠食糜、食糜干物质、肠液及肠液总蛋白流量上呈现白天流量大, 夜间流量小的变异规律, 而且在日间的平均流量上也存在差异。

关键词: 鸡 套管 食糜 肠液 总蛋白

Abstract: The variation of digesta flow in duodenum, jejunum and ileum of layer-type cockerels fitted with T-shaped cannula was investigated to study the biological character of intestinal digesta, which would provide a reference for developing in vitro digestion method in poultry feed evaluation. A 3×6 factorial completely randomized design with 3 digesta collection day and 6 digesta collection time per day was adopted. Fifteen birds in 3 groups were selected from 35 duodenal, 32 jejunal and 33 ileal cannulated cockerels, respectively, and each group was allotted into 5 replicates with 3 birds per replicate. The digesta was collected for 1 h out of every 4 h on d 31, 34 and 37 of the experiment. The flow of intestinal digesta, digesta dry matter, intestinal fluid, and total protein were determined. The results showed that no significant difference was found between the body weight on day 1 before cannulation operation and that on day 25 after operation (P>0.05). The percentage of cannulated cockerels in good health was about 80% on day 120 after operation. There was no significant difference of survival ratio in 3 groups of cannulated cockerels (P>0.05). The flow per hour of digesta, digesta dry matter and intestinal fluid was reduced from duodenum to ileum. Collection time in day cycle significantly affected the flow of digesta, digesta dry matter, intestinal fluid and total protein (P<0.05). The significant differences were found in average flow of digesta, digesta dry matter and intestinal fluid in duodenum, flow of digesta and intestinal fluid in jejunum, as well as total protein of jejunal fluid on different collection days (P<0.05). In conclusion, the cannulated cockerels can recover after 25 days and survive for at least 4 months. On ad libitum diet and natural light, the flow of digesta, digesta dry matter, intestinal fluid and total protein are more in daytime than night, and fluctuate on different collection days. [Chinese Journal of Animal Nutrition, 2011, 23 (5) : 789 - 798]

Keywords: cockerels, cannula, digesta, intestinal fluid, total protein

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