



丙氨酰谷氨酰胺二肽对哺乳仔猪生长性能、小肠形态学和血清生化指标的影响

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Effects of Alanyl-glutamine Dipeptide on Growth Performance, Small Intestinal Morphology and Serum Biochemical Indices of Suckling Piglets

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- 摘要
- 参考文献
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摘要 本试验旨在通过研究丙氨酰谷氨酰胺(Ala-Gln)二肽对哺乳仔猪生长性能、小肠形态学、血清生化指标的影响,以探讨Ala-Gln二肽提高哺乳仔猪健康和改善生长潜力的可能机制。选用体重、胎次、产仔数、泌乳量接近的8头健康云南纯种撒坝母猪所产的14日龄仔猪86头为试验对象,以窝为单位,将8窝仔猪随机分为2组,每组4窝,对照组42头补饲基础饲粮,试验组44头补饲试验饲粮(基础饲粮+0.3% Ala-Gln二肽)。试验期为21 d。结果表明:1)在哺乳仔猪饲粮中添加Ala-Gln二肽,显著提高了35日龄仔猪断奶平均体重($P<0.05$),极显著提高了14~35日龄仔猪平均日增重17.25%、平均日采食量31.66%($P<0.01$);试验组在试验期间各周的腹泻率均显著或极显著低于对照组($P<0.05$ 或 $P<0.01$)。2)试验组28日龄仔猪十二指肠绒毛高度显著高于对照组($P<0.05$),隐窝深度显著低于对照组($P<0.05$);空肠绒毛高度显著高于对照组($P<0.05$);在回肠上,试验组与对照组无显著差异($P>0.05$)。3)添加外源Ala-Gln二肽显著降低了28日龄仔猪血清尿素氮含量,极显著或显著提高了血清谷丙转氨酶($P<0.01$)、碱性磷酸酶活性($P<0.05$),极显著提高了空肠黏膜总二糖酶活性($P<0.01$),对总蛋白、白蛋白、葡萄糖、肌酐含量,乳酸脱氢酶、肌酸激酶、 $\text{Na}^+ - \text{K}^+ - \text{ATP}$ 酶活性均无显著影响($P>0.05$)。结果提示:在哺乳仔猪补料中添加外源性Ala-Gln二肽,可改善仔猪早期肠道结构与功能,提高生长潜力。

关键词: 哺乳仔猪;丙氨酰谷氨酰胺二肽;生长性能;小肠形态学

Abstract: This experiment was conducted to study the effects of alanyl-glutamine (Ala-Gln) dipeptide on growth performance, small intestinal morphology and serum biochemical indices of suckling piglets. The purpose was to explore the possible mechanisms of improving the health and growth potential of suckling piglets. Eighty-six 14-days-old piglets were from eight healthy pure Saba sows in Yunnan whose body weight, parity, litter size and milk yield were close to each other. One litter was a unit, and the piglets in eight litters were divided into two groups by a completely randomized design, and each group had four litters. The suckling piglets in control group were fed with a basal diet. The suckling piglets in test group were fed with an experimental diet (the basal diet+0.3% Ala-Gln dipeptide). The duration of the experiment was 21 d. The results showed as follows: 1) Ala-Gln dipeptide was added to the diet of suckling piglets, which significantly increased the average weanling weight of piglets aged 35 days ($P<0.05$), and the average daily gain and the average daily feed intake during the whole period (14 to 35 d) by 17.25% and 31.66% ($P<0.01$), while significantly decreased the diarrhea rate in every week during the whole period ($P<0.05$ or $P<0.01$). 2) At the age of 28 d, duodenal villus height in the test group was significantly higher than that in the control group ($P<0.05$), and crypt depth was significantly lower than that in the control group ($P<0.05$); jejunal villus height in the test group was significantly higher than that in the control group ($P<0.05$); there was no difference in villus height and crypt depth in the ileum between the test group and the control group ($P>0.05$). 3) Exogenous Ala-Gln dipeptide was added to the diet of suckling piglets, which significantly decreased serum urea nitrogen content ($P<0.05$), while increased alanine aminotransferase ($P<0.01$) and alkaline phosphatase activities ($P<0.05$) in serum, and total disaccharidase activity ($P<0.01$) in jejunal mucosa of piglets aged 28 days. Ala-Gln dipeptide had no significant effects on the contents of total protein, albumin, glucose and creatinine, and the activities of lactate dehydrogenase, creatine kinase and $\text{Na}^+ - \text{K}^+ - \text{ATP}$ ase in serum ($P>0.05$). These results indicate that supplementation of Ala-Gln dipeptide can improve the structure and function of small intestine, and the growth

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potential of suckling piglets. [Chinese Journal of Animal Nutrition, 2011, 23 (1) : 94-101]

Keywords: [suckling piglets](#); [alanyl-glutamine dipeptide](#); [growth performance](#); [small intestinal morphology](#)

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