The effects of glutamine and glutamate supplementation on the growth performance of weaning pigs with lower weight gain(1)

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Abstract

In the study, 48 LYD crossbred weaner piglets (weaned at 26 days of age) with lower weight gain were selected and allotted to one of three dietary treatments. Diet 1 was basal starter diet based on heat processed ground corn-soybean meal (control group); the control diet supplemented with 1% glutamine (Gln) or 1% glutamate (Glu) in replace of corn starch to make up the diet 2 (Gln+ group) and diet 3 (Glu+ group). Sixteen heavier weaning pigs from the same litters were selected and assigned to the positive control group (heavier group) and were fed the common starter diet based on corn-soybean meal. The experimental diets were fed for 17days and then all the diets were changed to the same common starter diet for the next feeding period (day18-31). The results showed that the heavier pigs had larger body weight (BW) and ADG on initial and d 17, but daily feed intake and feed efficiency (G/F) were not different among three poor weight gain groups. During d 18-31, the ADG of the three poor weight gain groups obviously increased, the Gln+ group was higher ($P < 0.05$) than the Glu+ group and heavier group, and the control group was higher than the heavier group ($P < 0.05$). There were no difference in ADG among treatments during the entire period (d 0-31), but the ADG in Gln+ group was somewhat higher compared with the others. The plasma creatinine and ALP activity in heavier group was higher ($P < 0.05$) than three poor weight gain groups on d 17, and the BUN concentration was lower ($P < 0.05$). The BUN concentration in the Gln+ group was still higher ($P < 0.05$) than the heavier group on d 31, and the plasma ALP activity in heavier group was lowest ($P < 0.05$). The results indicated that the weight gain for piglets fed the starter diet which based: on heat processed ground corn-soybean meal had a compensatory growth lower weight gain on the stage of d 18-31, but 1% of Gln or Glu supplementation was not beneficial for the subsequent growth.

Key words: Growth performance, Glutamate, Glutamine, Weaning pig.

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