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DIAMMONIUM CITRATE ADDITION TO A DIET RESTRICTED NON-ESSENTIAL AMINO ACIDS IN YOUNG PIGS

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A 28 day experiment with young pigs was conducted to evaluate the growth effect of diammonium citrate (DAC) by using three kinds of diets in which essential amino acids were supplied at the minimal requirement level for swine recommended by the N.R.C. (1973). The three diets groups of pigs were: C) a diet restricted by non-essential amino acids (basal diet); B) a basal diet plus 3.75% DAC (DAC diet); and A) a diet adjusted isonotrogenously to the DAC diet by natural feedstuffs (positive control diet).

The average daily weight gain in the group B pigs was greater than that in group C pigs ($P < 0.05$) and in group A pigs ($P < 0.10$). The average feed per weight gain in group A pigs was less than in the group C pigs ($P < 0.05$). There were no significant differences in carcass characteristics among the treatments.

In the experimental period, the plasma urea nitrogen levels were lower in group C than in groups A and B ($P < 0.01$). Similar trends were found in the urinary urea nitrogen. The α -amino nitrogen levels were higher in the group C pigs than in those from groups A ($P < 0.01$) and B ($P < 0.05$) in the early period of the experiment, and they were higher in the group A pigs in the latter period of the experiment ($P < 0.05$). There were no significant differences in packed cell volume, plasma total protein, blood ammonia nitrogen, and urine volume among the treatments. There was no clinical sign of ammonia intoxication in the pigs fed the DAC diet.

The response of the pigs to DAC indicates that the supplementation of DAC can improve growth when non-essential amino acids are restricted in the basal diet under the conditions of adequate essential amino acids and energy supply.