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## STUDIES ON BASAL DIETARY CONDITIONS FOR FEEDING NON-PROTEIN NITROGEN TO GROWING PIGS

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An experiment was conducted on six growing pigs averaging 27.8 kg to investigate the supplementary effect of urea or diammonium citrate (DAC) on a basal diet in which the first expected limiting factor for growth was total nitrogen. The animals were divided into three groups and given the following diets for 74 days: (1) the basal diet comprised of natural feedstuffs (crude protein, CP, 10.7%); (2) urea plus basal diet (CP 14.2%); and (3) the DAC plus basal diet (CP 14.1%). The criteria of non-protein nitrogen utilization were daily weight gain, the feed per gain ratio, and the nitrogen retention. In addition, blood was collected, <sup>15</sup>N-labelled non-protein nitrogen was orally administered, and the carcass composition was determined.

There was no significant differences among the three groups in the average daily weight gain and feed per gain. The growth of pigs fed the basal diet was within the normal range. The concentration of blood plasma urea nitrogen (BUN) after a diet given on the 20th day was significantly higher in the pigs fed urea or DAC than in the pigs fed the basal diet alone, while there were no significant differences among the three groups in the level of BUN before the morning feeding. The average rate of daily urinary urea nitrogen and urinary total nitrogen was higher in the pigs fed urea or DAC than in those fed the basal diet alone ( $P < 0.05$ ). More than half of the quantity of <sup>15</sup>N was excreted in the urine of the pigs fed urea or DAC within 24 hr after <sup>15</sup>N labelled non-protein nitrogen ingestion. The pigs fed DAC retained more ( $P < 0.005$ ) <sup>15</sup>N into the trichloroacetic acid precipitates of the liver, skeletal muscles, and serum than did the pigs fed only the urea.

These results suggested that supplementary urea, or DAC, was not effective for growth improvement under the present basal dietary conditions, and that the total nitrogen in the basal diet could not become a limiting factor for growth.