

Title: Effect of short term high tryptophan diet fed to sows on subsequent piglet behavior; #15-066

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Scientific Abstract:

The move to house sows in groups creates the challenge of decreasing fighting amongst sows. One proposed method is to feed a high tryptophan diet at the time of mixing of pregnant sows. However, the effect of high tryptophan on the developing fetus and subsequent piglet is unknown. Thus, 66 sows were fed 1 of 3 diets: Control (0.14% SID tryptophan), Medium (0.28% SID tryptophan), or High (0.42% SID tryptophan), from d 28 to 35 of gestation. Sows gestated in standard gestation stalls. Blood samples were taken prior to and after tryptophan supplementation. Day of birth was considered d 0. On d 1 and 2, 3 nursing bouts were observed from each sow to record disputes and displacements from teat competition. The pigs' time active, inactive, and fighting were recorded on d 3, 7, and 11 from 0700 h to 1700 h. On d 12, 4 pigs per litter (2 females, 2 males) were blood sampled. On day 14, 2 pigs per litter (1 female, 1 male) were subjected to a 10-min Isolation Test and 5-min Human Approach Test. On d 15, 2 pigs (same sex) from different litters were subjected to a 10-min Social Challenge test and then immediately blood sampled. On d 18 ± 1.5 pigs were weaned. There were no differences ($P > 0.10$) for number born (12.7 ± 0.4), born alive (11.7 ± 0.4), or mortality (1.1 ± 0.2) among treatments. Pigs from all 3 treatments had equal amounts of disputes and displacements during nursing ($P > 0.10$). Nursing bout duration was similar among treatments (198.8 ± 4.8 s, $P > 0.10$). High pigs performed fewer nursing bouts than did pigs in the other two treatments ($P < 0.02$). No differences were detected for any of the variables for Isolation Test or the Human Approach Test ($P > 0.10$). During the Social Challenge test, High pigs had more contacts approaching the head of the companion pig than did either Medium or Control pigs (14.3 ± 1.1 , 10.7 ± 1.1 , and 9.69 ± 0.8 respectively, $P < 0.007$). Total number of aggressive interactions during the test tended to be greater for Medium pigs compared to High pigs (9.3 ± 1.5 vs 5.1 ± 0.9 , $P < 0.06$), with Control pigs (7.1 ± 1.5) being intermediate and not different than Medium pigs ($P > 0.10$). Time budget data of the litter indicate that pigs from all 3 treatments spent equal amounts of time active and inactive ($P > 0.10$). Aggression was low with $.3 \pm .04$ % of the observation periods recording aggression for all 3 treatments. Feeding high concentrations of tryptophan for a short duration early in gestation does not have a negative impact on sows' subsequent offspring.

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