

ANIMAL WELFARE

Title: The impact of routine piglet processing on well-being – NPB# 04-043

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Date Received: March 31, 2006

Abstract: Soon after birth, piglets undergo procedures that are a likely source of stress. The aim of the first experiment was to evaluate stress responses evoked by two alternative methods for performing the following processing procedures: 1) teeth resection (TR) – clip vs. grind; 2) tail-docking (TD) – cold vs. hot-clip; 3) identification (ID) – ear notch vs. tag; 4) iron administration (FE) – inject vs. oral; 5) castration (CA) – cords cut vs. torn. Eight to ten litters of eight, 2-3 day-old piglets were assigned to each procedure. Within each litter 2 piglets were assigned to 1 of 4 possible procedures: the two alternative methods, a sham procedure, and a sham procedure plus blood sampling. Blood was sampled before processing and at 45 min, 4h, 48h, 1wk, and 2wks post-procedure and assayed for cortisol and beta-endorphin. Procedures were video-taped and analyzed to evaluate the time taken to perform the procedure and the number of squeals, grunts and escape attempts. Piglets were weighed before the procedure and at 24h, 48h, 1wk and 2wks afterwards. Lesions were scored on a 0 to 5 scale on ID, TD and CA pigs at 24h, 1 wk and 2wks post-procedure. For TR, grinding took about 20s longer than clipping and resulted in higher cortisol levels overall, poorer growth rates, more escape attempts and longer vocalizations ($P<0.05$). For TD, hot clipping took longer ($P<0.05$) and resulted in more, longer and higher frequency squealing ($P<0.001$) and more neuromas ($P<0.05$). For FE, oral delivery took longer and resulted in more squealing ($P<0.05$). For ID, notching took longer, resulted in higher lesion scores ($P<0.05$), more, higher frequency squealing ($P<0.001$), more escape attempts ($P<0.01$) and tended to result in higher cortisol concentrations ($P<0.1$). For CA, tearing took longer and resulted in more squealing and escape attempts ($P<0.05$). The aim of our second experiment was to compare a combination of the five different procedures. Comparisons were made between processing pigs with the ‘most’ aversive methods and the ‘least’ aversive methods. The same two control groups were included and the same parameters as experiment 1 were measured. A total of 8 pigs from each of 10 litters were used - one male and one female pig per treatment. Body weight did not differ between treatments ($P>0.1$). Females did not differ in their plasma cortisol response to processing ($P>0.1$). In contrast, male pigs in both the Most and Least treatments exhibited elevated plasma cortisol at 45 min after processing as compared to Control pigs ($P<0.001$). Pigs in the Most treatment performed more squeals as compared to the Least ($P<0.01$) and the two control treatments ($P<0.001$). Pigs in the Least treatment performed more squeals than in the two control treatments ($P<0.07$). However, when adjusted for the amount of time required to perform the two treatments, no treatment differences were noted ($P>0.1$). These data indicate that both the Most and Least processing approaches reported in this study result in robust stress responses. In addition, the time required to perform procedures contributes significantly to the stress experienced by the pigs. Future work to qualify measures of stress during these procedures may be beneficial.

These research results were submitted in fulfillment of checkoff funded research projects. This report is published directly as submitted by the project's principal investigator. This report has not been peer reviewed

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