RESEARCH ABSTRACT

ANIMAL SCIENCE

Title: Using objective mechanical and physiologic measurement to build robust producer tools for detecting, scoring and treating lameness in sows" **- NPB# 09-073**

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Scientific Abstract:

Objectives of this study were to: (1) validate a lameness scoring system and provide a supplemental visual library for future training, (2) to assess sodium salicylate and flunixin meglumine (Banamine®) for pain mitigation in sows with induced transient lameness (3) and validate the CASFP as an objective assessment tool for sow lameness. Twenty four mixed parity crossbred sows were anesthetized and injected with amphotericin B in the distal interdigital space of both claws of one chosen leg to temporarily induce lameness. Sows were randomly assigned to one of two analgesic treatment groups or a control treatment: 1. Sodium Salicylate (orally 35mg/kg q.12.h + 0.04 ml/kg sterile saline IM q.24.h), 2. Flunixin meglumine (2.2 mg/kg IM q.24.h), or 3. Control (0.04 ml/kg sterile saline IM q.24.h). Forty-eight hours post-induction, NSAID treatments began daily for four consecutive days (Day +2 to Day +5). Sodium salicylate was orally top-dressed twice/day with an IM injection of sterile saline once/day for handling consistency. Flunixin meglumine was injected IM once/day. Sterile saline was injected IM once/day. Lameness was evaluated using both subjective and objective measures. Lameness was subjectively assessed using a numerical rating lameness scoring system consisting of 4 categories ranging from 0 (no lameness) to 3 (severe lameness). Observers were trained using video with verbal description of ideal sows per category. Lameness scores were assessed at 2 day intervals throughout the 21 day trial. Sows were objectively assessed using the CASFP. Data was collected on Day -1 (sound day), Day +1 (lame day) and Day+6 (last day of treatment) relative to induction (Day 0). Observers agreed on the correct category of lameness 71.4% of the time. The average weighted Kappa was 0.7049 with a range of 0.3529 to 0.8897. There was no significant difference in the deviations between adjacent scores ($p<0.0001$). In addition the production of a library of approximately 150 hours of sow gait video footage in HD format which demonstrates a range of clinical severities can be used to train producers and veterinarians to recognize various severities of lameness. Proc Mixed of SAS 9.2 was used to analyze the difference between sound leg and lame leg. CASFP data for all four feet was analyzed statistically for each individual foot (LF, RF, LR, and RR) and was compared to the other non-injected feet. CASFP measurements on Day +6 showed no significant difference between weights (kg) placed on the plate among treatment (control, sodium salicylate, Banamine) groups. This lameness assessment tool was not able differentiate a possible effect of NSAID treatment to mitigate pain response from Day+1 to Day+6. CASFP data was analyzed on Day -1 (sound day) and Day +1 (lame day) and compared the effect of individually injected feet. When the LF and RF feet were injected, there was a significant decrease in the weight being placed on the injected foot on Day +1 ($P<0.05$). This data confirms that the CASFP is a objective assessment tool for sow lameness.