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Safety Evaluation of Intramuscular Administration of Zuprevo® Compared to Draxxin® in the Treatment of Swine Respiratory Disease at Weaning Age

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Abstract : The objective of the present study was to compare the safety of intramuscular administration of Zuprevo® (tildipirosin, 40 mg/mL) with Draxxin® (tulathromycin, 100 mg/mL) in the treatment of swine respiratory disease at weaning age. The trial was carried out in two farrow-to-finish farms with 300 sows (farm A) and 500 sows (farm B) in a batch-production system. Farm A had no history of respiratory problems, whereas farm B had a history of respiratory outbreaks with increased mortality (> 2%) in the nursery. Both farms were positive to Pasteurella multocida, Bordetella bronchiseptica, Actinobacillus pleuropneumoniae and Haemophilus parasuis. From each farm, one batch of piglets was included (farm A: 644 piglets; farm B: 963 piglets). One day before weaning (day 0; 18-21 days of age), piglets were identified by an individual ear tag and randomly assigned to a treatment group. At day 0, Group 1 was treated with a single intramuscular injection with Zuprevo® (tildipirosin, 40 mg/mL; 1 mL/10 kg) and group 2 with Draxxin® (tulathromycin, 100 mg/mL; 1 mL/40 kg). For practical reasons, dosage of the product was adjusted according to three weight categories: < 4 kg, 4-6 kg and > 6 kg. Within each farm, piglets of both groups were comingled at weaning and subsequently managed and located in the same facilities and with identical environmental conditions. Our study involved the period from day 0 until 10 weeks of age. Safety of treatment was evaluated by 1) visual examination for signs of discomfort directly after treatment and after 15 min, 1 h and 24 h and 2) mortality rate within 24 h after treatment. Efficacy of treatment was evaluated based on mortality rate from day 0 until 10 weeks of age. Each piglet that died during the study period was necropsied by the herd veterinarian to determine the probable cause of death. Data were analyzed using binary logistic regression and differences were considered significant if $p < 0.05$. The pig was the experimental unit. In total, 848 piglets were treated with tildipirosin and 759 piglets with tulathromycin. In farm A, one piglet with retarded growth (< 1 kg at 18 days of age) showed an adverse reaction after injection of tildipirosin: lateral recumbence and dullness for ± 30 sec. The piglet recovered after 1-2 min. This adverse reaction was probably due to overdosing (12 mg/kg). No adverse effect of treatment was observed in any other piglet. There was no mortality within 24 h after treatment. No significant difference was found in mortality rate between both groups from day 0 until 10 weeks of age. In farm A, overall mortality rate was 0.3% (2/644). In farm B, mortality rate was 0.2% (1/502) in group 1 (tildipirosin) and 0.9% (4/461) in group 2 (tulathromycin)($p=0.60$). The necropsy of piglets that died during the study period revealed no macroscopic lesions of the respiratory tract. In conclusion, Zuprevo® (tildipirosin, 40 mg/mL) was shown to be a safe and efficacious alternative to Draxxin® (tulathromycin, 100 mg/mL) for the early treatment of swine respiratory disease at weaning age.

Keywords : antibiotic treatment, safety, swine respiratory disease, tildipirosin
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