PAPER 316

IN-FEED AIVLOSIN FOR CONTROL OF EXPERIMENTAL ENZOOTIC PNEUMONIA IN PIGS

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Introduction and Objectives

Aivlosin is a semi-synthetic macrolide antibiotic derived from tylosin, with activity against gram positive bacteria and mycoplasmas. It has potential for the treatment and control of several important veterinary pathogens. This study investigated its potential for prevention and treatment of enzootic pneumonia associated with *Mycoplasma hyopneumoniae* using an experimental model.

Materials and Methods

Six groups of 5-6 week old pigs were used. Group 1 (nine pigs) were an unchallenged control group. Groups 2 to 6 each comprised 12 pigs and were all challenged: Group 2 received in-feed Aivlosin for prevention (at 50ppm, commencing one day before challenge), Groups 3 & 4 in-feed Aivlosin for treatment (at 50 or 100 ppm), Group 5 in-feed treatment with reference, licenced product (Econor® at 200 ppm) and Group 6 unmedicated challenge control. Medication for treatment commenced 4 days after challenge and all medications continued for 7 days. The challenged groups were inoculated intranasally with a 1:100 dilution of pneumonic lung material containing *M.hyopneumoniae,* on two consecutive days. Pigs were observed for clinical signs and killed for *post mortem* examination 19 days after challenge exposure (seven days after the end of medication for Groups 3 to 5).

The challenge material represents a series of passages of lung material containing *M.hyopneumoniae* originally derived by infection of gnotobiotic piglets and subsequently passaged through SPF pigs. The minimum inhibitory concentration of Aivlosin against the challenge isolate was 0.07 ug/ml. Feed intake records indicated a mean intake of Aivlosin of 2.5 mg/Kg for pigs fed at 50 ppm and 5.3 mg/Kg for those fed at 100 ppm.

The extent of pneumonic lesions was assessed subjectively and expressed at percent pneumonic involvement (1).

Results and Discussion

Mild clinical disease with coughing was seen in all challenged groups and at *post-mortem* examination lesions of enzootic pneumonia were observed. In the prevention part of the study, mean pneumonic involvement in the group fed Aivlosin at 50 ppm was 14.4% ± 8.9% which was significantly less ($p = 0.02$) than in the unmedicated controls (26.3% ± 13.1%). Gross lesions showed more evidence of healing than the unmedicated controls. A significant reduction ($p = 0.04$) was also seen in the lung weights expressed as a percentage of body weight compared to the controls (1.57% versus 1.77%).

Significantly more body weight was gained during the study ($p = 0.046$) by the prevention group compared to the controls (mean of 11.4 Kg versus 9.4 Kg). There was also an improvement in feed conversion ratio during the treatment period (1.71 versus 2.52).

In the treatment part of the study, pigs in Groups 3 and 4 that received Aivlosin at 50 ppm and 100 ppm, had a mean pneumonic involvement of 12.9% ± 10.7% and 17.9% ± 10.0% respectively, compared to a mean of 16.2% ± 13.0% for Group 5 that received Econor® and 26.3% ± 13.1% for the challenged controls. Although all treatment groups had less lung involvement than the controls, only Aivlosin at 50 ppm showed a statistically significant reduction ($p = 0.01$). A reduction was also seen in the lung weights expressed as a percentage of body weight in the treatment groups compared to the controls (Group 3 = 1.56%, Group 4 = 1.53% and Group 5 = 1.55% versus 1.77%). Significantly more weight was also gained by the treatment groups compared to the challenge controls ($p = 0.01$). The total mean weight gain for the Aivlosin 50 ppm and 100 ppm groups was 11.3 and 11.9 Kg respectively, compared to a mean weight gain of 11.5 Kg for the Econor® group and 9.4 Kg for the challenged controls.

Aivlosin at 50 ppm was effective for the prevention of experimentally induced enzootic pneumonia as shown by a significant reduction in both lung involvement and improvement in weight gain.

Aivlosin at 50 ppm, when used for the treatment of experimentally induced enzootic pneumonia, produced a significant reduction in lung involvement ($p = 0.01$) and also a significant improvement in weight gain. Aivlosin at 100 ppm also produced a reduction in lung involvement and a significant improvement in weight gain. A similar effect was seen with the licenced product Econor® when used at a higher inclusion rate of 200 ppm and there was little difference in the effects of the two products.

References

1. Thacker B, et al. 1988. *Proc 10th IPVS,* 69.