INTRODUCTION

Lincosycin, an antibiotic produced by Streptomycetes lincolnensis, when administered to swine in the feed, has been reported to be effective for the treatment and control of swine dysentery, treatment of mycoplasma pneumonia of swine, and growth promotion. The antibiotic is absorbed and transported to the site of infection. The concentration of lincosycin in lung tissue is near or exceeds the minimum inhibitory concentration for Mycoplasma pneumoniae based on in vitro data.

Mycoplasma pneumonia of swine (MPS) is a prominent swine disease responsible for large economic losses to swine producers. A limited number of antibacterial agents have been evaluated for the treatment of MPS.

Macroscopic and microscopic MPS lesions have been described for pigs with natural infections. A high correlation between gross and microscopic lesions exists. The macroscopic lesions caused by Mycoplasma pneumoniae differ from the lesions caused by other bacterial agents which cause respiratory diseases.

The objectives of the experiments reported herein were to determine the effect of the addition of 0, 22, 44, or 88 mg of lincosycin per kg of swine feed to a diet on lung lesions associated with MPS, 2) daily gain (G), and 3) feed utilization (F/G).

EXPERIMENTAL PROCEDURES

Data presented herein were collected and pooled from nine experiments conducted at five different locations where pigs were fed diets containing 0, 22, 44, or 88 mg of lincosycin per kg. Data are from a total of 776 pigs. Dietary treatments were replicated three or four times at each site with 16 to 24 pigs per treatment.

Parameters to assess efficacy were gross lung lesions observed with MPS when pigs weighed about 90 kg, daily gain and feed utilization during the period of growth from approximately 25 to 90 kg live weight.

Lung Lesion Data

Lungs were examined and the presence or absence of macroscopic lesions associated with MPS determined and expressed as the number of pigs with lesions per experimental unit or pen divided by the total number of pigs examined per experimental unit (P/DU).

The number of lung lobes with MPS lesions per experimental unit or pen per total number of lobes examined (number of pigs per pen times seven lobes per pig) designated as LORF reflected the incidence of the infection within lungs, and the percent of a pig's lung with lesions per total number of pigs examined within an experimental unit (LORP) was the variable used to indicate severity of the infection.

Performance Data

Average daily gain and average daily feed consumption were based on weight gain and feed consumption of pigs within a pen divided by the number of pig days for the period (number of pigs in a pen times number of days in a period). If a pig died or was injured during the period and the cause was not related to treatment, i.e., prolapse, injury, porcine stress syndrome, etc., the weight change and feed consumption by the pig was determined and subtracted from the pen value. If the death was considered to be treatment related, the data for that pig was included with the data for other pigs within a pen.

Feed/gain ratio was calculated by dividing the total feed consumption per pen of pigs divided by the total gain by pigs within a pen.

Statistical Analysis

Data were subjected to least squares analysis of variance and pairwise comparisons were based on the least significant difference (LSD) test. Ratios were subjected to a Freeman-Halton transformation prior to analysis and values in percent were subjected to an arcsin transformation for analysis. Experiment by treatment (E/T) interaction term in the statistical model was tested against the error term, and if not significant, E/T was pooled with the error term for testing treatment effects.

RESULTS

MPS Lesions

The number of pigs with gross lesions associated with MPS was reduced by 13 or 10% when they received diets which contained 44 or 88 mg of lincosycin per kg, respectively. The number of infected lobes and the total amount of lung with lesions was significantly decreased by adding either 22, 44, or 88 mg of lincosycin to each kg of feed. The number of infected lobes was decreased by 21 to 24%. The percentage of the total lung affected was also decreased by 19 to 27%.

Performance

Daily gain throughout the growing-finishing period, 18 to 90 kg live weight, was 37% greater by pigs fed lincosycin when compared with pigs fed non-treated pigs (P<0.10). Feed utilization was not affected.

CONCLUSIONS

Feeding pigs diets throughout the growing-finishing period which contained lincosycin resulted in improved health based on reduced incidence and severity of mycoplasma pneumonia lesions. The minimum level of lincosycin required was dependent on the parameter used to assess efficacy and ranged from 22 to 88 mg/kg. 44 mg/kg resulted in fewer pigs with pneumonia lesions associated with MPS when compared with the results for pigs fed non-medicated diets. However, pigs fed diets which contained 22 mg of lincosycin per kilogram had less severe MPS and also grew faster than pigs fed diets void of antibacterials.