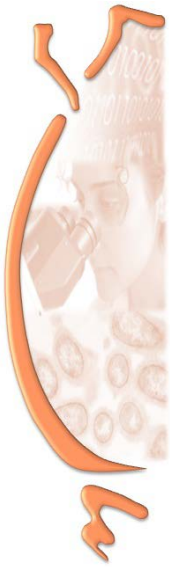

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Comparison of efficacy and pharmacokinetics of two oral colistin sulfate doses used for the treatment of experimental post-weaning diarrhea in pigs

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Colistin sulfate (CS), a cationic antimicrobial peptide, is used worldwide in pigs mostly for the treatment of *Escherichia coli* post-weaning diarrhea (PWD). However, the recommended dose or duration of CS treatment is often surpassed on farms. The objective of this study was to evaluate the effect of two oral CS doses in the treatment of an experimental PWD, and to determinate the effect of ETEC: F4 infection on CS intestinal absorption using an HPLC-MS/MS.

A total of 96 pigs were used, challenge was carried out by oral administration of a hemolytic ETEC: F4 strain resistant to nalidixic acid. CS was administered orally at a dose of 100.000 UI/kg (trial 1) or 50.000 UI/kg (trial 2) twice a day for 5 days. Fecal shedding of total *E. coli*

and ETEC: F4 were evaluated using MacConkey agar and blood agar plates containing nalidixic acid, respectively. Blood samples were collected from the jugular vein of 8 pigs in each treated group, challenged or not, at 0.5, 12, 24, and 48 hours after the last CS oral administration.

In both trials, CS treatment resulted in a significant reduction of total *E. coli* and ETEC: F4 fecal shedding between d2 and d6 ($p < 0.0001$) in the challenged treated compared to the challenged untreated groups. However, a significant reduction in fecal excretion of total *E. coli* and ETEC: F4 was observed in trial 2 compared to trial 1 between d1 and d3, inclusively ($p < 0.0001$).

In both trials, CS plasma concentrations were statistically higher in the challenged treated compared to the unchallenged treated groups.

Regardless of the dose of CS used, the reduction of fecal total *E. coli* and ETEC: F4 shedding were observed only during the treatment period. Furthermore, the increase of CS oral dose was not accompanied by an increase in its therapeutic effectiveness. Furthermore, ETEC: F4 oral challenge increased CS intestinal absorption.