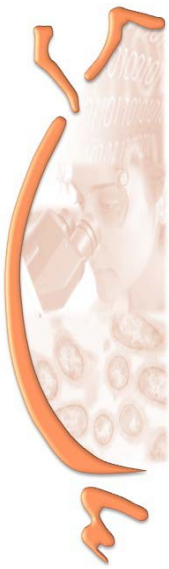

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The effect of colistin sulfate on fecal *Escherichia coli* excretion and growth performance of weaned pigs challenged with enterotoxigenic *Escherichia coli* F4 (K88)

Mohamed Rhouma[1, 2, 3], Francis Beaudry[4], William Thériault[1, 2, 3], Nadia Bergeron[1, 2, 3], Sylvette L-Lewandowski[1, 2,3], John Morris Fairbrother[2, 5], Ann Letellier[1, 2, 3,4]

[1]Chaire de recherche en salubrité des viandes (CRSV), [2]Groupe de recherche et d'enseignement en salubrité alimentaire (GRESA), [3]Centre de recherche en infectiologie porcine *et avicole (CRIPA), [4]Groupe de recherche en pharmacologie animale du Québec (GREPAQ), [5]OIE Reference Laboratory for Escherichia coli (EcL)*

Escherichia coli strains involved in postweaning diarrhea (PWD) have developed resistance to several families of antimicrobial agents. Colistin sulfate (CS) is used "off-label" in Canada for the treatment of PWD. The aim of the present study was to determine the effect of a conventional oral regimen of CS for the treatment of PWD, on the development of *E. coli* CS resistance and to evaluate the effect of ETEC: F4 infection on CS intestinal absorption.

A total of 48 pigs were used in this study. Challenge was carried out by oral administration of 10^9 CFU of a hemolytic ETEC: F4 strain resistant to nalidixic acid. CS was administered orally one day after inoculation of pigs, at a dose of 50.000 UI/kg twice a day for 5 days. Feces were examined clinically and bacteriologically before and after challenge to evaluate presence of diarrhea and *E. coli* fecal excretion. ETEC: F4 virulence factors were monitored with a multiplex PCR. CS plasma concentrations were quantified by an HPLC-MS/MS.

From one until six days after CS administration, a significant reduction in the fecal excretion of ETEC: F4, total *E. coli*, ETEC: F4 virulence factors and in diarrhea scores was observed in the

challenged treated group compared to the challenged untreated group (p <0.0001). Lower growth performances were observed in challenged pigs compared to non-challenged animals (p <0.0001). Increased resistance to CS was not clearly detected in ETEC: F4 and total *E. coli* population (p >0.05). Challenge with ETEC: F4 resulted in an increase in the intestinal absorption of CS in the challenged group compared to the non-challenged one.

Our study is the first to demonstrate in an experimental model of induction of PWD, that CS at a dose of 50,000 IU/kg is effective in reducing fecal excretion of *E. coli*. However, a reduction of *E.coli* fecal excretion was also observed in challenged untreated animals as in treated animals, and CS treatment did not increase growth performance in challenged pigs.