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Effect of treatment with doxycycline and tylosine on excretion of *E. coli* F18 in faecal pen floor samples

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Introduction

Enteric diseases account for the majority of antibiotic treatments of nursery pigs in Denmark. F18 positive *E. coli* can be detected in faecal pen floor samples, and are often found as cause of diarrhoea outbreaks.

The most common treatment method of diarrhoeic outbreaks in Danish nursery pigs are five days of oral treatment with tylosine or doxycycline

Objectives

The objective was to assess the efficiency of five days of treatment with tylosine or doxycycline measured on *E. coli* F18 excretion in pen floor samples analysed by qPCR sampled at the day of treatment and two days after treatment.

Conclusions

- The results of the study show that reduction of excretion of *E. coli* F18 was not associated with antibiotic treatment
- This indicates that pigs can stop excreting *E. coli* F18 without any antibiotic treatment



Results

F18 detection at initiating of treatment

	Doxycycline	Tylosine	Total treat ^d	No treat	p-value ^e
Positive pens ^a	13	14	27	48	
Mean excretion positive pens ^b	10 ^{6.15}	10 ^{6.22}	10 ^{6.19}	10 ^{6.17}	0.581

F18 detection 2 days after last treatment

	Doxycycline	Tylosine	Total treat	No treat	p-value
Positive pens	1/13	4/14	5/27	14/48	0.459
Mean excretion positive pens	10 ^{7.74}	10 ^{5.95}	10 ^{6.31}	10 ^{6.19}	0.887

Reduction of F18 excretion after treatment^c

	Doxycycline	Tylosine	Total treat	No treat	p-value
Pen with reduction	12/13	13/14	25/27	41/48	0.584
Mean reduction in excretion	-10 ^{5.56}	-10 ^{4.52}	-10 ^{5.02}	-10 ^{4.36}	0.351

Notes. ^alower detecting limit = 10^{3.18} CFU/gram faeces, ^bcoliforming unit per gram faeces, ^cDifference of excretion level two days from the day of first treatment to two days after last treatment day, ^dPens treated with doxycycline or tylosine ^echi² test

Mean pen-level diarrhoea prevalence at the time of sampling was 22.5% (CI95%, 17.0-27.0). Reduction of excretion of *E. coli* F18 was observed in 66 of 75 pens. The proportion of pens with reduction in *E. coli* F18 excretion was not statistical significantly different between pens treated with tylosin (93%), doxycycline (92%) (p= 0.50) or pens receiving no antibiotic treatment (85%) (p=0.58).

Materials and Methods

- 75 pens sampled 14 and 21 days after weaning in three herds
- Pen-level diarrhoea prevalence was assessed by faeces scoring of 15 randomly selected pigs per pen
- 13 *E. coli* F18 positive pens were treated five days with 12.5 mg/kg doxycycline hydrate
- 14 *E. coli* F18 positive pens were treated five days with 7.5 mg/kg tylosine
- All antibiotics were administered orally via water troughs
- 48 *E. coli* F18 positive pens did not receive any treatment
- Change in excretion levels for *E. coli* F18 was calculated by subtracting the paired qPCR results originating from the same pens
- Effect of treatment on reduction of excretion of F18 was tested by chi² test.