FACULTEIT DIERGENEESKUNDE
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Comparing antimicrobial resistance prevalence studies on pathogenic-commensal *E. coli* from pigs and bovines in Belgium

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Aim:

To harmonize and compare the 2011 national Belgian monitoring report results of studies for commensal and pathogenic *Escherichia coli*

Materials-Methods:

Refer to "CODA-CERVA trends and sources 2010-2011; report in zoonotic agents in Belgium"

Results:

Commensal *E. coli* isolates*:* pigs (n= 157), (meat-production) bovines (n=154) (Fig. 1).

Pathogenic *E. coli :* Pigs(n= 135). Bovines(n= 545) (Fig.2).

Study Comparisons: Commensal isolates from pigs were significantly more resistant than bovines' isolates against ampicillin, sulphonamides, tetracycline, trimethoprim and streptomycin.

For pathogenic E. coli, bovines' isolates are significantly more resistant than pigs' isolates against neomycin, nalidixic acid, enrofloxacin, gentamycin, florfenicol, amoxycillin with clavulanic acid.

Discussion

Different outcome between commensal-pathogenic *E. coli* isolates and the two animal species.

Different methodology- criteria used between studies => Commesal *E. coli*: epidemiological cut-off's (EUCAST)

Pathogenic *E. coli:* clinical breakpoints (CLSI)

Need to make studies using harmonized methods!

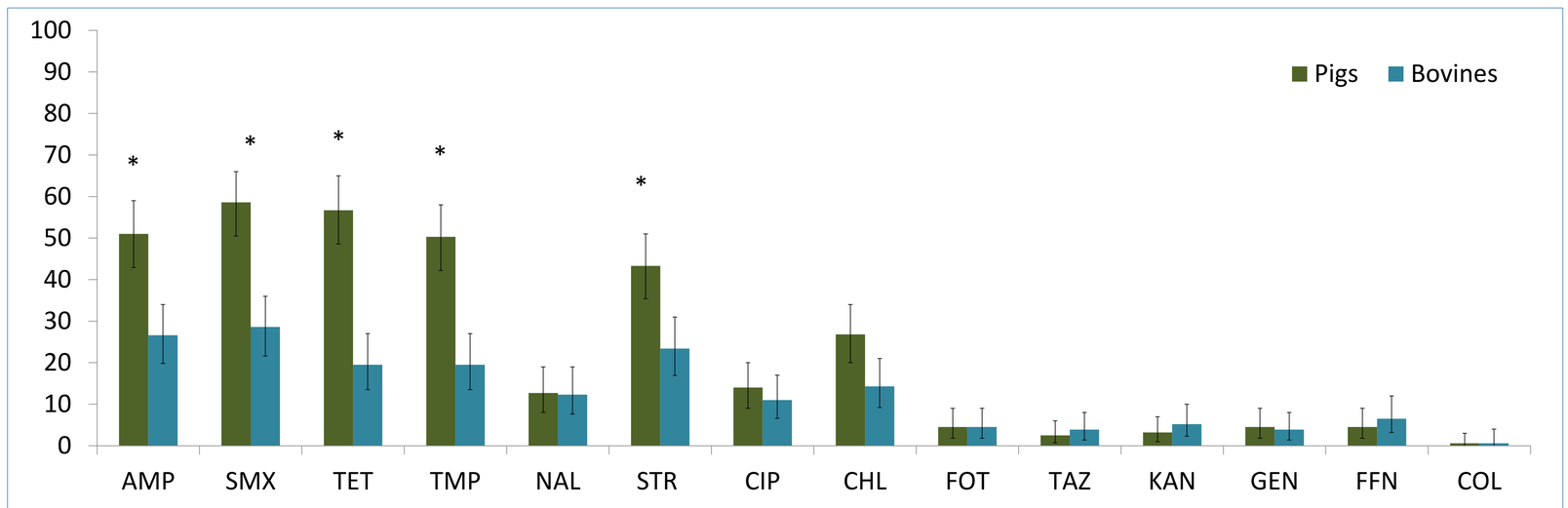

Figure 1. Commensal *E. coli* isolates resistance prevalence against antimicrobial agents in pigs and bovines.

Micro broth dilution method was used and epidemiological cut off values were applied to determine the antimicrobial resistance prevalence, according to EUCAST standards. Significant differences between studies are indicated with * (P-value was set at 5%)

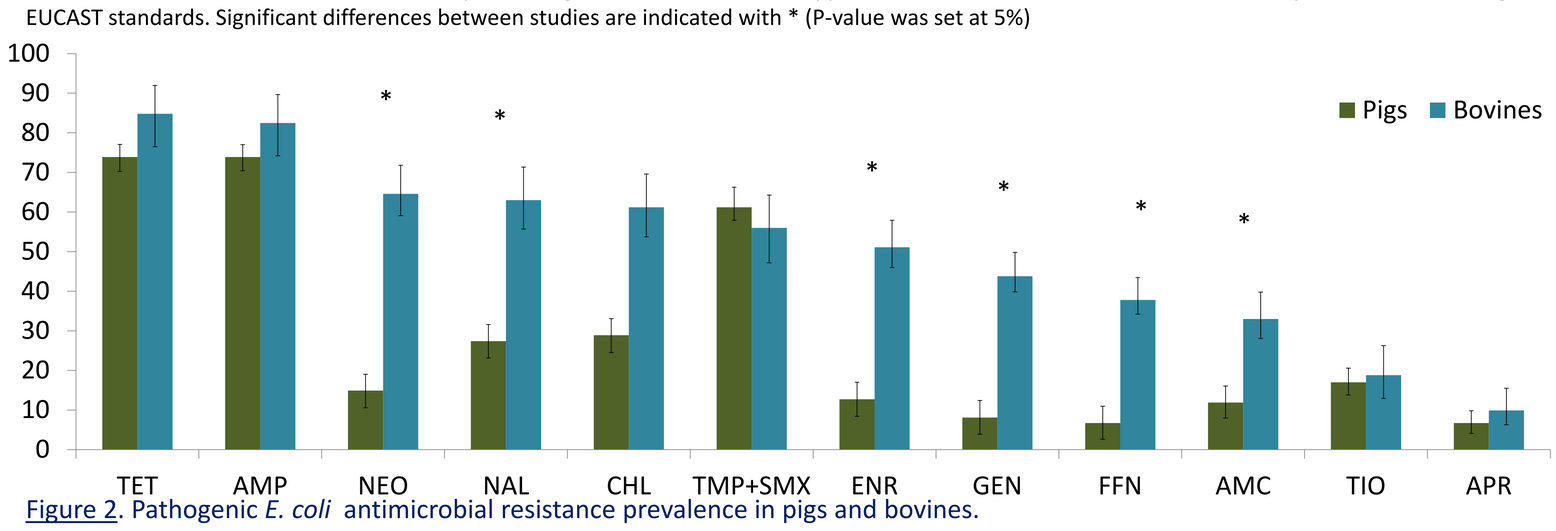

Figure 2. Pathogenic *E. coli* antimicrobial resistance prevalence in pigs and bovines.

Disk diffusion method was used and clinical breakpoints (CLSI standards) were implemented. Significant differences between studies are indicated with * (P-value was set at 5%)

Antimicrobials abbreviations: AMP: ampicillin, AMC: amoxycillin- clavulanic acid, TET: tetracycline, TMP: Trimethoprim, SMX: sulfomethoxazole, TIO: ceftiofur, NAL: nalidixic acid, ENR: enrofloxacin, APR: apramycin, NEO: neomycin, GEN: gentamycin, STR: streptomycin, CHL: chloramphenicol, FFN: florfenicol

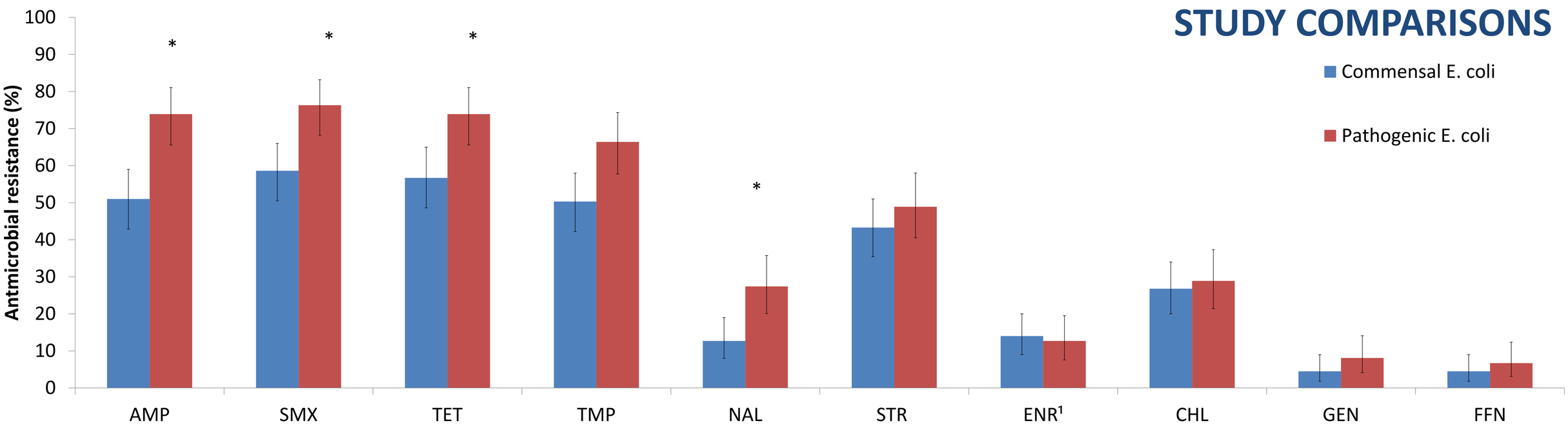

Figure 3. Study comparison between the VAR pathogenic *E. coli* study and the VAR commensal *E. coli* study in pigs.

Data harmonization with CLSI breakpoints for clinical resistance was applied to both datasets. Significant differences between studies are indicated with * (P-value was set at 5%)

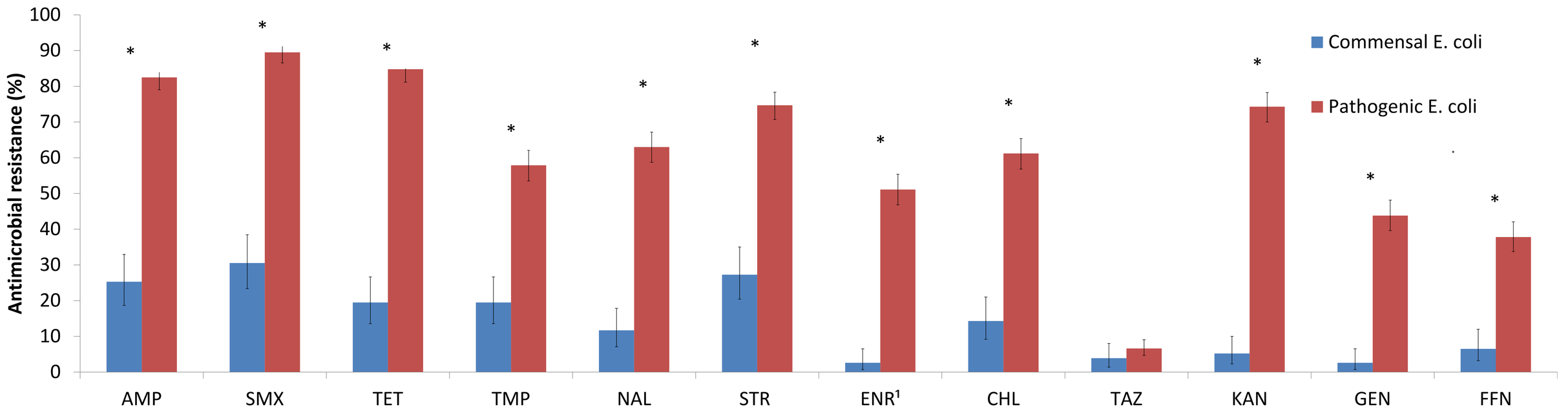

Figure 4. Study comparison between the VAR pathogenic E. coli study and the VAR commensal *E. coli* study in bovines.

Data harmonization with CLSI breakpoints for clinical resistance was applied to both datasets. Significant differences between studies are indicated with * (P-value was set at 5%)

- **In general, pathogenic *E. Coli* isolates have higher antimicrobial resistance prevalence than the commensal.**
- **Age of the animals, genetic background of the *E. coli* isolates, and the possible previous administration of antimicrobials to the clinically ill animals could explain partially these differences**