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Dose-response of ESBL/AmpC-*E. coli* colonization and excretion in young chicks

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Aim

ESBL/AmpC producing bacteria are present at all levels of the broiler production pyramid[1], and shortly after arrival at the farm young chicks are already found ESBL/AmpC-*E. coli* positive[2]. **The aim** of this study is to determine the dose-response of time-until-colonization and level of excretion of ESBL/AmpC-*E. coli* in young broiler chicks.

Material and Methods

- One-day old SPF broilers (*n*=160), 10 animals per isolator, in 3 rounds
- Oral inoculation with 0.5 mL CMY-2-*E. coli* or PBS (control), at day after hatch
- Dose: 10^1, 10^2, 10^3, 10^4 or 10^5 CFU/mL
- Individual cloacal swab at t=0, 1.5, 3, 6, 9, 12, 15, 20, 24, 28, 32, 48, 52, 56, 72 h after inoculation
- Detection and quantification of ESBL/AmpC-*E. coli* in cloacal swabs and caecal content

Results

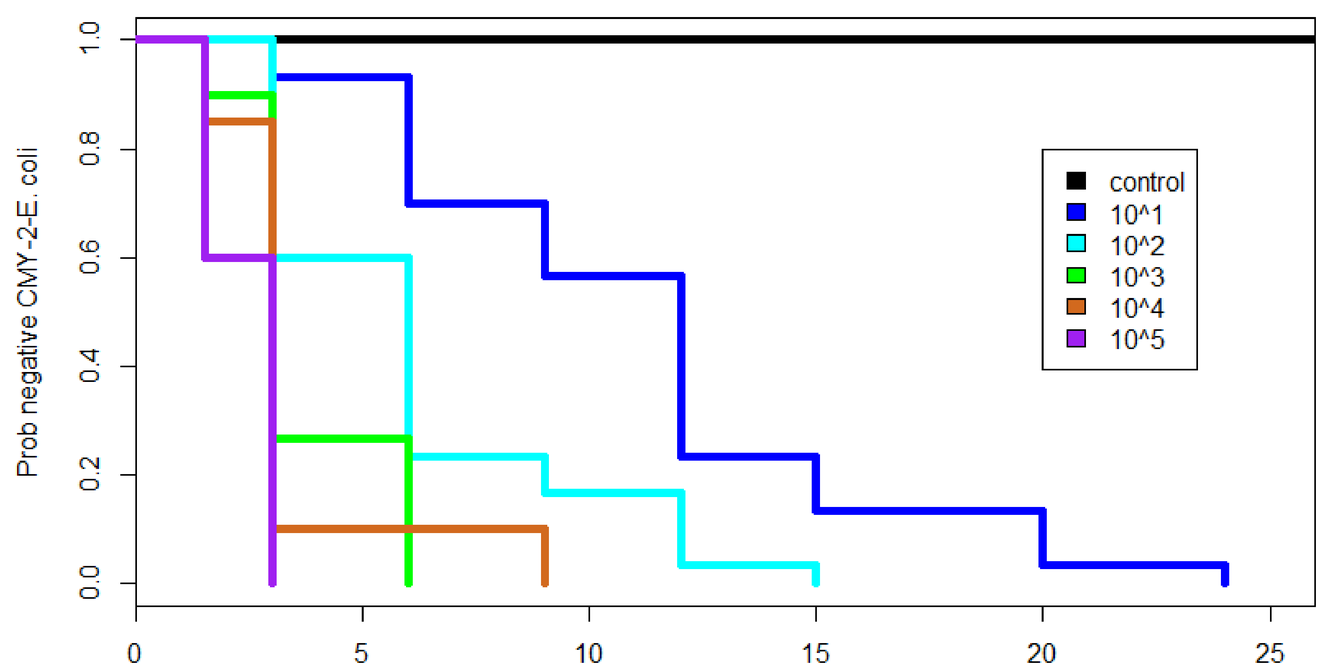

Figure 1. Time (h) until CMY-2-*E. coli* excretion per dose level

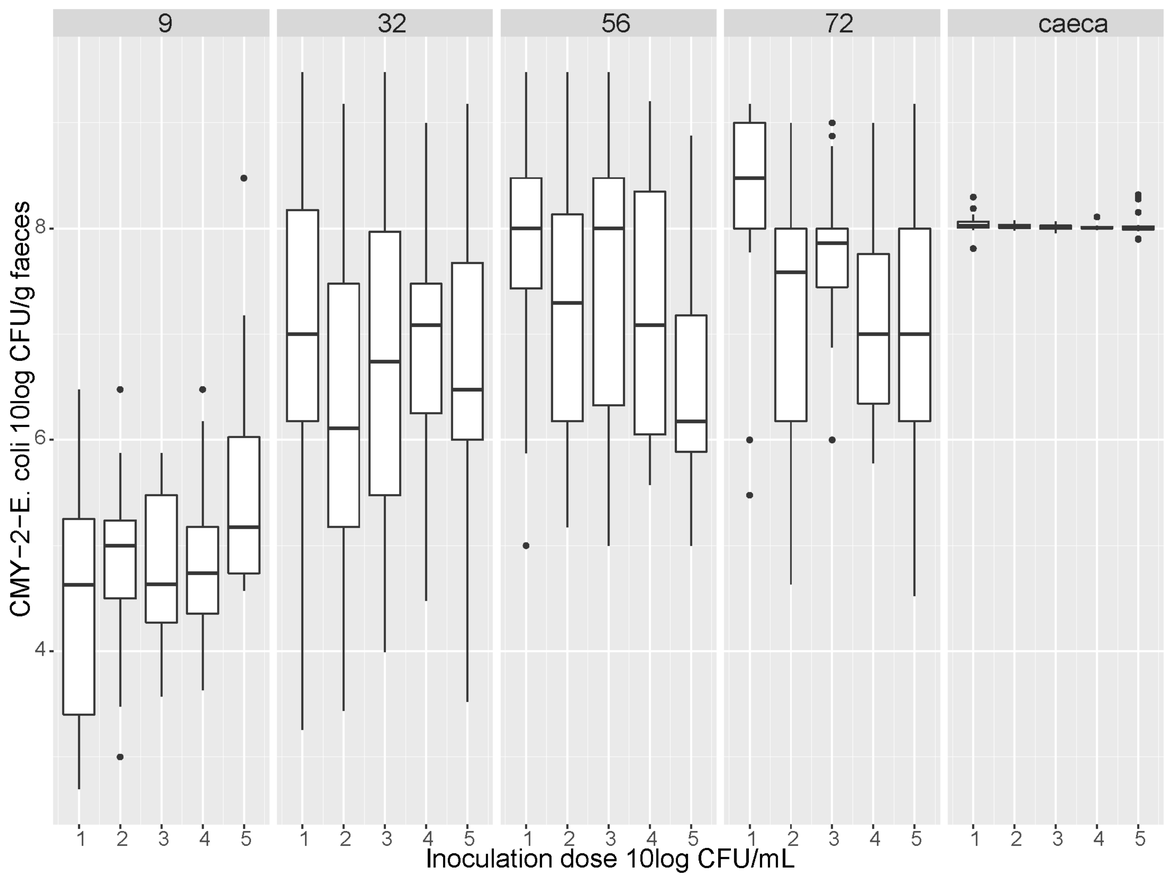

Figure 2. CMY-2-*E. coli* excretion (10log CFU/g faeces) t (h) after inoculation and in caecal content per dose level

Conclusion

- Time until CMY-2-*E. coli* excretion decreases with increasing inoculation dose
- Within 24 hours after inoculation all birds excrete CMY-2-*E. coli*
- Excretion levels of CMY-2-*E. coli* increase over time

References

[1]Dierikx et al. Presence of ESBL/AmpC -producing Escherichia coli in the broiler production pyramid: A descriptive study. *PLoS ONE* **8** (2013).

[2]Huijbers et al. Transmission dynamics of extended-spectrum-β-lactamase and AmpC β-lactamase producing Escherichia coli in a broiler flock without antibiotic use. Prev Vet Med **131** (2016).

Acknowledgement

This study was funded by the public-private collaborative project: 1H4F-Reduction of ESBLs: evaluation of ESBL interventions (AF 14210) and by TKI Agri&Food, project ESBLDyn (CVI-1600001154)

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