

PREVALENCE OF THE PROTOZOAN PARASITE *CRYPTOSPORIDIUM* IN THREE ORGANIC PIG FARMS IN DENMARK

INTRODUCTION

Pigs are a potential source of environmental contamination with *Cryptosporidium* spp., which can lead to infection in humans.

Cryptosporidiosis in humans is primarily caused by the species specific *C. hominis* and the zoonotic *C. parvum*. However, other species including *C. suis* and *C. scrofarum* can also cause zoonotic infections.

The parasite is among the most common nonbacterial causes of severe human gastroenteritis and diarrhoea, which can be life-threatening for children and immunocompromised individuals (1).

In naturally infected pigs, cryptosporidiosis is normally asymptomatic, but diarrhoea has been observed in experimental infected small piglets (2, 3).

AIM OF THE STUDY

to analyze seasonal and age related variation in the herd prevalence of *Cryptosporidium* spp. in organic pig farms

MATERIALS AND METHODS

Faecal samples were collected in September 2011, December 2011, Marts 2012 and June 2012 from three Danish organic pig farms, with 200 -250 sows . Faecal samples (n=994) were collected from 390 pigs on farm 1, 312 pigs on farm 2 and 292 pigs on farm 3.

The pigs were allocated into groups according to age:

- **Piglets** 1 – 6 weeks
- **Weaners** 10 – 16 weeks
- **Fattener** 17 – 22 weeks
- **Sows** pregnant or lactating

From each pig, faecal samples were collected rectally and stored at 5°C until quantification of *Cryptosporidium* oocysts.

The oocysts were quantified by immunofluorescence microscopy, with a minimum detection limit of 200 oocysts per gram (OPG) faeces (2).

Examination of faeces for *Giardia* Spp. is on going, as well as molecular characterisation, which will reveal the zoonotic potential

Acknowledgements : This research was funded by the Green Development and Demonstration Programme (GDDP). A special thanks to Laboratory technician Lise-Lotte Christiansen for the many hours she spent on this project



RESULTS

The prevalence of *Cryptosporidium* positive pigs on each farm was found to be **33% (farm 1), 41% (farm 2) and 42% (farm 3)**, irrespectively of age and season. The prevalence of *Cryptosporidium* positive pigs at each sampling point was **39% in September, 42% in December, 33% in Marts and 40% in June**.

The prevalence of positive pigs varied between age groups both at study and on farm level, with the weaners having the highest prevalence (Fig. 1).

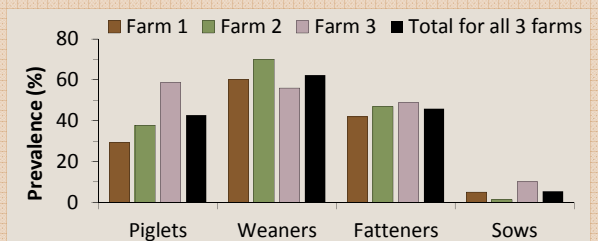


Fig. 1. Age related prevalence in pigs positive for *Cryptosporidium* oocysts on three organic pig farms.

The intensity of the infection was age dependent with the youngest pigs having the highest OPG (Fig. 2).

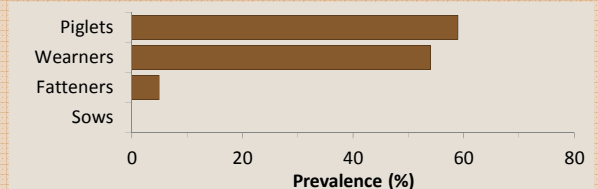


Fig. 2. The percentage of *Cryptosporidium* positive organic pigs with $>10^4$ OPG.

An apparent correlation between intensity of the infection and farm was observed, i.e. 60% of the pigs with more than 10^6 OPG all originated from the same farm, which also had the highest prevalence of cryptosporidiosis among sows.

There were no significant differences in the infection intensity between the four sampling times.

CONCLUSION

This study documented:

- age dependent variation in *Cryptosporidium* prevalence both on study and farm level.
- age related intensity of *Cryptosporidium* infection
- no noteworthy variation in *Cryptosporidium* prevalence on farm level or between seasons.

References

- (1) Tzipori, S. *et al.* (1982). *Vet. Parasitol.* Vol. 11, 121-126
- (2) Maddox-Hyttel C. *et al.* (2006). *Vet Parasitol.* Vol. 141, 48-59.
- (3) Enemark H.L. *et al.* (2003). *Vet Parasitol.* Vol. 113, 35-57.

¹Department of veterinary disease biology, Faculty of Health and Medical Sciences, University of Copenhagen, Denmark, *Email: heidihp@sund.ku.dk

² Section for Bacteriology, Pathology and Parasitology, National Veterinary Institute, Danish Technical University, Denmark