

INVITATION

PUBLIC DEFENSE

The use of serology in the control of *Ascaris suum* infections in pigs

Elise Vandekerckhove
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Promotor

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Curriculum Vitae

Elise Vandekerckhove was born on December 27th 1983 in Belgium.

She graduated Veterinary Medicine at Ghent University in 2009. She worked as a practitioner in Companion animals and Pigs, until she started her PhD track in March 2013 at the Laboratory of Parasitology, Faculty of Veterinary Medicine, Ghent University.

Elise Vandekerckhove is author and co-author of 3 scientific peer-reviewed publications. She has presented at several national and international conferences and symposia and has taught several classes and practical courses during her doctoral programme.

Where?

The defense will take place on
Tuesday 9th January 2018 at 15:00 hours

Het Pand
Onderbergen 1
9000 Gent

The defense will be followed by a reception.

Attendance

Please confirm your attendance for the reception before 20th December 2017 to: Isabelle.Despeghel@UGent.be

Summary

Ascaris suum is by far the most common parasite infecting pigs in modern pig farms. Although this parasite is still very prevalent and is known for its impact on the economic outcome of the pig industry, due to the subclinical nature of the disease combined with a lack of appropriate diagnostic tools, ascariasis often remains undiagnosed. Nevertheless, it is important to understand the infection intensity in a herd, in order to apply an appropriate deworming program.

In recent years several studies have investigated the use of serology to more accurately measure the level of exposure of pigs to *A. suum*. Baring this in mind, this thesis focused mainly on how serology could be further implemented in practise.

In **chapter 2** we evaluated whether serology can be used to measure exposure of piglets to *A. suum* during the nursery phase. Experimental infection studies were performed in which 7 groups of 10 piglets of 4 weeks of age were orally infected with either 10, 20, 40, 60, 80, 100 and 500 *A. suum* eggs/day during 7 consecutive weeks. Serum was collected on a weekly basis to monitor seroconversion on

serology. A dose-dependent seroconversion was measurable with the L3-lung ELISA starting from 4 weeks post-infection onwards, whereas this was not measurable with the AsHb ELISA. The results of a seroprevalence study sampling 10 piglets on 68 different nursery farms in Belgium showed that 38 % of the farms analysed all piglets tested seronegative, whereas for the remaining 62 % of the farms the percentage seropositive piglets ranged from 10 to 100 %. This indicates contamination of the nursery facilities with *A. suum* eggs. The outcome of this study shows that serology can be used to measure exposure of nursery piglets to *A. suum*, thereby providing an additional tool in the control of this widespread parasite.

Chapter 3 focused on the effect of a strategic deworming program on *Ascaris* infection levels and technical performance parameters in fattening pigs. Eighteen stables on 18 different fattening farms were monitored for a period of 7 consecutive fattening rounds. A deworming program using 200mg/ml fenbendazole oral suspension in drinking water for 2 days every 6 weeks was implemented for 6 consecutive fattening rounds. For each fattening round and for each stable, technical performance parameters including average daily growth, feed conversion, days in fattening and the percentage of affected livers were obtained from the producers. Blood was collected in each stable from 10 animals at the end of each fattening round and evaluated using serology. The results

clearly indicated an improvement in terms of exposure of the animals to *Ascaris suum* after the implementation of a strategic deworming program, as measured by 2 different serological tests. The decline in anti-*Ascaris* antibody levels was especially detectable in the stables that originally tested positive for *Ascaris*. There was no improvement detectable of the technical performance parameters in the investigated stables. Yet, hierarchical linear mixed models indicated that the L3-Lung ELISA was a significant predictor of decreased ADG, increased FCR and prolonged DIF for the animals that tested positive for *Ascaris*.

The control of parasite infections remains an important aspect. Serology showed to be a useful diagnostic tool to assess the worm status on a farm of both piglets and fattening pigs, making it possible to control this parasite in a more decisive way by applying an adequate treatment strategy. Additional control measures through farm management and stable infrastructure could be implemented to lower the exposure of the piglets to *A. suum* during the nursery phase and to avoid further transmission to the fattening units. Furthermore, anti-*Ascaris* antibody levels were a significant predictor of decreased technical performance of the animals. Thus, serology can also be used to estimate economic losses due to *Ascaris*.