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The SERASCA®-test: a novel tool to diagnose Ascaris suum infections in fatteners

Introduction

The pig industry and associated meat industry is from an economic point of view a very important sector in Flanders. The sector accounts for a production of about 1.2 billion EURO or about 30% of the total output of the Flemish agriculture. The sector is characterized by small profit margins that are influenced by several factors.

One of those factors is the presence or absence of roundworm (*Ascaris suum*), the most important parasite infecting fattening pigs. This parasite is still a major problem in modern pig production and causes lesions in the liver, the so-called 'white spots', and lungs. While the latter are predisposing for viral and bacterial infections the white spots on the liver ensure that a significant number of full or partial livers are rejected at the slaughterhouse. Moreover, it appears that pigs infected with Ascaris have less efficient feed conversion, therefore need more time to reach their slaughter weight and thereby consume more feed. If, besides the factors above also costs of deworming and treatment of secondary infections are considered, it is clear that infection with Ascaris has an important economic impact on the current swine industry.

The control of ascariasis is done traditionally by mass-helminth therapy. However, despite their high efficacy, the long-term benefits of the treatments are often disappointing because of :

- Rapid reinfections due to a highly contaminated environment.
- The subclinical nature of this infection and the difficulties of diagnosing the infection. Counting worm eggs provides little or no information on the degree of infection, since only in a small percentage of infected animals eggs can effectively be found in the manure. Also the percentage of rejected livers at the slaughterhouse is a parameter that is difficult to interpret and rather subjective. The white spots are only a temporary immunological response that indicates a recent infection. It is also possible that the livers of animals infected early in fattening period were completely normal in the slaughterhouse.

Because of these problems with the diagnosis, there is a lack of information on the infection rate of the pigs on the farms. Farmers are thus often not aware of the infection levels with the result that the applied deworming strategies are rarely evaluated or adapted. A simple and inexpensive test that allows to evaluate the general infection status of a group of pigs, however, would be a solution.

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The SERASCA ® test

The laboratory for Parasitology at the Faculty of Veterinary Medicine has recently developed a serodiagnostic test (the SERASCA®-test) by which exposure of animals to *A. suum* during the fattening period can be measured. With a diagnostic specificity and sensitivity of 99,5 %, the test clearly performs better than the currently used diagnostic tools such as faecal egg counts and percentage condemned livers at slaughter.

We conducted the SERASCA ® test in 2011 on 101 randomly selected Flemish pig farms. The results showed that on 45% of these farms at least half of the examined pigs were seropositive in the SERASCA ® test, pointing to the presence of a clear *Ascaris* infection. Recent research, carried out on 20 pigs farms, showed that the SERASCA ® test clearly provided a more accurate picture of the infection rate of a farm than the number of rejected livers at slaughter, which is currently still the standard for the evaluation of the infection rate. Moreover, a significant negative correlation was found between the SERASCA ® test results and the number of fattening days in these 20 companies. This again could be an indication that the presence of this parasite causes growth retardation in the animals.

In order to optimally implement the SERASCA®-test in practice it is now essential to link the SERASCA®-test results to production parameters and potential economical losses. In this way, farmers and practioners can decide, based on the test results, whether additional worm control measurements are needed and warranted and how fast improvement of the situation can be expected.

References

Vlaminck J., Nejsum P., Vangroenweghe F., Thamsborg S., Vercruysse J., Geldhof P. Evaluation of a serodiagnostic test using *Ascaris suum* haemoglobin for the detection of roundworm infestation in pigs. *Veterinary Parasitology* 2012 189:267-273

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