

OCCURRENCE OF *TOXOPLASMA GONDII* IN SWINE IN LATVIA – PRELIMINARY RESULTS

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Deksnē G. 2010. Occurrence of *Toxoplasma gondii* in swine in Latvia - preliminary results. *Acta Biol. Univ. Daugavp.*, 10(2): 143 - 145.

Toxoplasma gondii is a protozoan parasite of great medical and veterinary importance as a major source of parasitic zoonosis. The aim of this study was the seroprevalence of *Toxoplasma gondii* in swine's slaughtered in Latvia in 2010. Examination of swine's revealed a seroprevalence of 7,4%. It is concluded that the risk of contracting *T.gondii* infection as a result of eating undercooked pork from Latvian pigs is not negligible.

Key words: *Toxoplasma gondii*, Protozoa, parasite, swine, Latvia.

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INTRODUCTION

The protozoan parasite *Toxoplasma gondii* is a widespread pathogen, infecting both animals and humans. Antibodies against *T. gondii* have been detected at different species of animals – insectivorous, bats, birds, rodents, predators etc. (Arnaudov *et al.* 2003).

Meat-producing animals can be infected with *T. gondii*, but pork was considered as the most important source of *T. gondii* for humans. It has been pointed out that older animals show higher prevalence of the parasite, and these animals are frequently used for the production of sausages, salami and cured meat, with potential risk for human infection after the intake of these foodstuffs (Aspinall *et al.* 2002.).

The aim of the study was to determine the seroprevalence of *T. gondii* in swine's slaughtered in Latvia in 2010 first six month. The survey was done by demonstrating specific antibodies in meat juice samples.

MATERIALS AND METHODS

Collection of samples

From January till July a total of 230 fattening and unknown sex pig meat samples were collected from seven slaughterhouses in Latvia situated in different parts of country. Sampling was done in connection with statutory examination of wild boars for *Trichinella* larvae.

A 50 g of muscle sample was cut from diaphragm and placed in plastic container. The samples were frozen and stored at -20°C . Meat juice were collected from the thawed samples and stored at -20°C until test.

ELISA

ELISA plates were coated with *T. gondii* proteins diluted to $10\ \mu\text{g/ml}$ and incubated over night at 4°C . The test was performed according Lind *et al.* (1997) with some modifications. Meat juice samples were tested by means of an indirect ELISA. Samples were diluted 1 : 40 and analyzed in duplicates. In order to correct for plate-to-plate variation, positive and negative control meat juice were included in every plate and corrected values for the optical density (OD) were calculated as previously described (Hill *et al.* 2006). An $\text{OD} > 0.234$ was considered to be positive. Plates were read at 450 nm using ELISA reader (Labsystems Multiskan MS).

RESULTS AND DISCUSSION

Serological surveys of *T. gondii* infection in swine's have been conducted in many countries. A common finding is that the seroprevalence in adult swine's is higher than that in fattening swine's (Dubey, Beattie 1988).

In the present study, the observed seroprevalence in fattening pigs was 7.4 %. A prevalence found is higher compared to that obtained in Denmark (3,1%), in Finland (2,5%) and in Sweden (3,3%) (Lind *et al.* 1994, Hirvela-Koski 1992, Lunden *et al.* 2002).

The examined samples came from six districts of Latvia. *T. gondii* positive animals were recorded in five districts (Fig. 1). The seroprevalence differs in districts from 0% in Limbazu district till 15 % in Tukuma district.

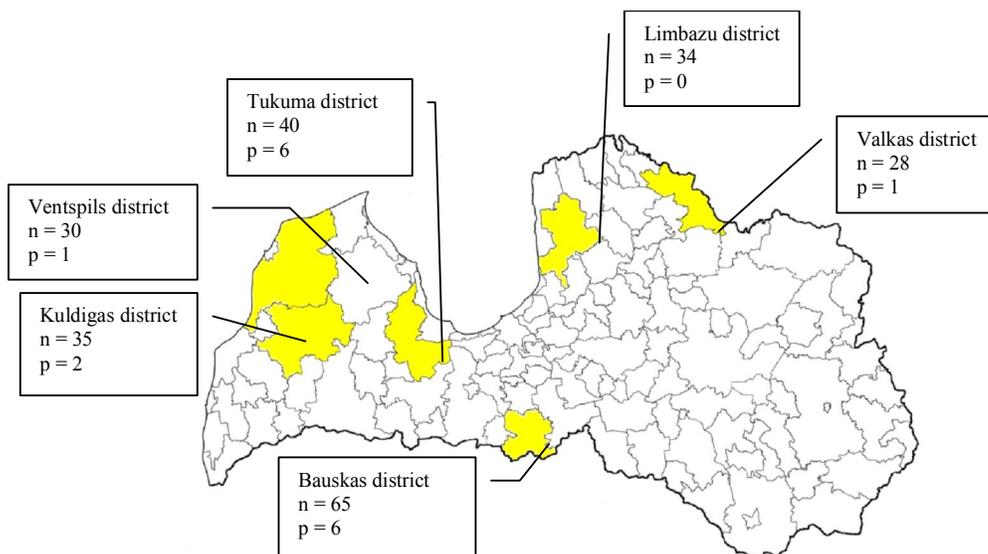


Fig. 1. Map of Latvia showing the districts where the samples were collected. n – number of estimated pigs; p – number of pigs positive for *Toxoplasma gondii* antibodies.

In Europe and the US, the prevalence of *T. gondii* infection in swine's appears to have declined during the last 30 years. The results of the studies show that due to modern fattening systems the prevalence of infections with *T. gondii* in slaughtered swine's has obviously decreased in Austria during the last 10 years. The investigations indicate a significant difference in the rate of infection of swine's between 1982 (13.7%) and 1992 (0.9%). Additionally, the prevalence of *T. gondii* antibodies in breeding sows (1982, 43.4%; 1992, 4.3%) was higher than that in fattening swine's (1982, 12.2%; 1992, 0.8%) (Edelhofer 1994).

In conclusion, this study confirms that *T. gondii* infection is common in swine's in Latvia. It is concluded that the risk of contracting *T. gondii* infection as a result of eating undercooked pork from Latvian pigs is not negligible.

ACKNOWLEDGEMENTS

Author is grateful to Prof. Peter Lind (Danish Veterinary Laboratory, Denmark) and Furio Spano (Istituto Superiore di Sanita, Italy) for support. This study was financed by ESF project „Support for Daugavpils University PhD studies program implementation” (agreement No.2009/0140/1DP/1.1.2.1.2/09/IPIA/VIAA/015).

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Received: 18.11.2010.

Accepted: 19.12.2010.

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