

SEROPREVALENCE OF *TOXOPLASMA GONDII* INFECTION IN PIGS IN EXTENSIVE BREEDING FROM SARANDA DISTRICT OF ALBANIA

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ABSTRACT

The main aim of this study was to determine the sero-prevalence of *Toxoplasma gondii* infection in pigs from extensive breeding of Saranda county in southern of Albania. Was collected 92 samples of pigs sera from 13 extensive farms at the time of slaughter in slaughterhouses. Collected blood was left to express serum and it was kept in a freezer until the time when samples were processed in the laboratory of Microbiology of Faculty of Veterinary Medicine of Tirana, Albania. Serum samples were examined by indirect ELISA method using ID Screen Multi-species kit (ID.VET., France) for anti-*Toxoplasma* specific Ig G antibodies, resulting from infection with *Toxoplasma gondii*. Samples sera presenting S/P value % less than or equal to 40% are considered negative, between 40-50% are considered doubtful, greater than or equal 50% are considered positive. Out of 92 samples collected from 13 farms, 16 sera had anti- *Toxoplasma* Ig G antibodies. Average prevalence was 17.4 %.

INTRODUCTION

Toxoplasma gondii is an obligate intercellular parasite that infects a wide variety of warm blooded mammals, including people and birds. The life cycle of *T. gondii* is complex in the way that infection can be maintained in populations of intermediate hosts without the presence of a definitive host. Intermediate hosts become infected when oocysts, tachyzoites, or tissue cysts in another intermediate host are ingested. The importance of this parasite in food safety, human health and animal husbandry has been well recognized. In pigs, infection occurs by eating kitchen scraps unsterilized or rodents (Ionela Hotea et al). Pigs are important for the transmission of toxoplasma infection in humans and animals.

Infected pig meat is a source of *T. gondii* infection for humans and animals (Hassan Hajian-Bidar, 2014).

The diagnosis of toxoplasmosis is based largely upon the application of histopathological, bioassay, and serological examination such as enzyme linked immune-sorbent assay (ELISA) (Gharekhani, 2013). Sero-diagnosis has been a more full and adequate tool for epidemiological studies in both human and animals (Hassan Hajian-Bidar, 2014). The sensitivity and specificity of ELISA is higher than other serologic techniques (Figueiredo et al, 2001). Numerous studies have been reported in many countries for the detection of *T. gondii* infection in pigs by means of indirect ELISA. Thus, using indirect enzyme linked immune-sorbent assay (ELISA), the seroprevalence of infection in pigs was 10.4% in pigs bred in Sicily, Southern Italy (W. Buffolano, 2009). In farmed pigs in Maryland USA the seroprevalence of *Toxoplasma* infection was 25% (Dubey J.P et al 2008). In Ghana the prevalence of *Toxoplasma* infection in pigs was 40.6% (Arko-Mensah, et al. 2000) and in China's southern Guangdong Province the seroprevalence of *Toxoplasma* infection in pigs was 58.1% (Zhou D H, 2010). In Egypt,

using ELISA test the prevalence of *Toxoplasma* infection in pigs was 52,2% (El Faragalla M, 2011).

In view of the importance of potential role in the zoonotic transmission of toxoplasmosis, and the fact of the spread of infection by *Toxoplasma gondii* in many countries of the world, the main objectives of this study were studying the prevalence of *T. gondii* infection in slaughtered pigs of Saranda, county of Albania using Indirect ELISA. This study carried out for the first time in Albania.

MATERIAL AND METHODS

In this study, blood samples was collected randomly from pigs slaughtered of extensive farms in Saranda. A total of 92 pigs (approximately 5% of the pig population of the area) was investigated in the 13 different extensive farm of this district. From each pig slaughtered 10 ml blood by heart puncture was taken. Blood samples were centrifuged after standing over night at room temperature for separating serum at 3000 rotations per minute for 10 minutes. The criteria like age, sex, breed, origin, farm status and rearing system of the investigated pigs were recorded.

Anti-*Toxoplasma* antibodies of samples were detected using a commercially available *T. gondii* ELISA kit (ID Screen® Toxoplasmosis indirect multi-species; ID.Vet company, France). The presence of antibody was determined by calculating of S/P% according to the manual formula. S/P value % less than or equal to 40% are considered negative, between 40-50% are considered doubtfull, greater than or equal 50% are considered positive.

RESULTS AND DISSCUSION

Were examined for the detection of *T. gondii* antibodies 92 serum samples from slaughtered pigs with indirect ELISA. Antibodies to *T. gondii* were found in 17,4% (16 from 92) pigs sera tested. (Table 1 and chart nr. 1). Seroprevalence of toxoplasma infection was 17,4% (chart nr.1). Chart No. 2 shows seroprevalence of *Toxoplasma* infection of Saranda pigs.

Table 1. Positive sera and the values of S / P% tested with indirect ELISA

Nr.	n.of sample	age	S/ P% Positive
1	15	5 month	60.83128
2	66	9 month	101.4089
3	17	5 month	82.8813
4	43	6 month	71.53927
5	5	7 month	111.2716
6	50	5 month	73.44135
7	64	8 month	126.1751
8	125	8 month	135.7872
9	33	5 month	88.51708
10	147	5 month	58.29517
11	6	36 month	61.67665
12	22	4 month	111.7647
13	17	7 month	61.32441
14	14	6 month	58.9292
15	24	12 month	82.45861
16	22	11 month	77.31596

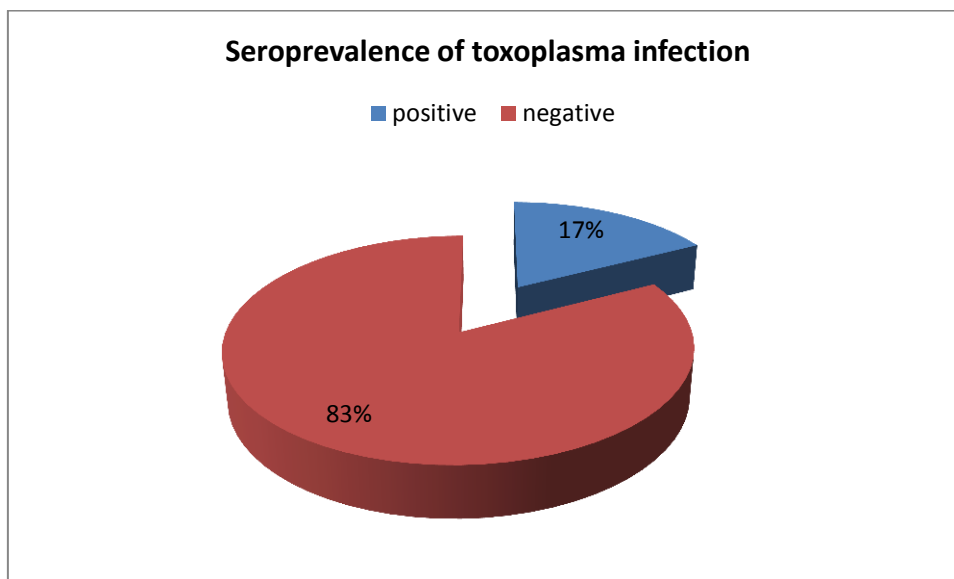


Chart nr. 1. Nr. of positive and negative sera tested for toxoplasma infection

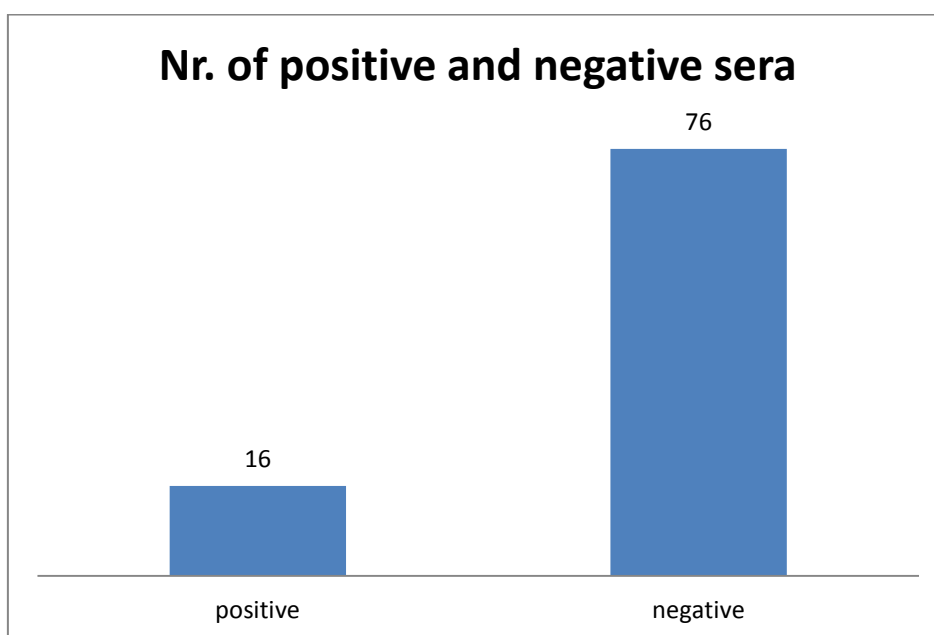


Chart no. 2. Seroprevalence of Toxoplasma infection of sera of Saranda pigs

From the table noted that the pigs age is 5 months and older. From the table noted that the pigs age is 5 months and older. So it is mainly fattening pigs, in which the possibility of contact with other animals intermediate host is high. If we compare our results with those of other authors we shall notice that they either are lower, or are equal to those. So, the seroprevalence of infection was 10.4% in pigs bred in Sicily, Southern Italy (W. Buffolano, 2009), in USA seroprevalence of toxoplasma infection was 25%, or or much higher than that of diagnosed by us (Dubey J.P et al 2008). In China's southern Guangdong Province the seroprevalance of Toxoplasma infection in pigs was 58.1% , or more than three times higher than that diagnosed by us (Zhou D H, 2010).

CONCLUSIONS

In conclusion, the seroprevalence 17,% of toxoplasma infection of pigs of Saranda district presented to this work, it is an average prevalence. The highest age of the infected pigs is related to the feeding habit and management of Albanian pigs, which usually feed outdoors, predisposed to contract the infection with *T. gondii* oocysts.

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