

Molecular infection prevalence of ruminants' Tunisian meat by three protozoa:

Toxoplasma gondii, *Neospora caninum* and *Sarcocystis* spp.

Mohamed Gharbi¹, Yosra Amdouni², Safa Amairia⁴, Mariem Rouatbi¹, Sofia Awadi², Mourad Rekil³

¹ Laboratoire de Parasitologie, Univ. Manouba, Institution de la Recherche et de l'Enseignement Supérieur Agricoles, École Nationale de Médecine Vétérinaire de Sidi Thabet, 2020 Sidi Thabet, Tunisia

² Regional slaughterhouse of Béja, 9000, Tunisia

³ International Center for Agricultural Research in the Dry Areas (ICARDA), P.O. Box, 950764 Amman 11195, Jordan

E-mail: (Mohamed Gharbi) gharbim2000@yahoo.fr

Introduction

Ruminants' meat is the main food Human protein source in Tunisia (mainly lamb and beef meat). This meat can be contaminated by two zoonotic protozoa: *Toxoplasma gondii* and *Sarcocystis hominis*. *Neospora caninum* is a protozoan infecting dogs and herbivores; it causes abortions in female herbivores and acquired neosporosis in dogs. Little information is available on these parasites in Tunisia but during the last years, surveys were performed in Tunisia.

The authors present herein, molecular studies of these three protozoa infection prevalences in Tunisian beef, lamb and goat meats.

Sarcocystis spp.

Sarcocystosis is a parasitic disease caused by a coccidian protozoa of the genus *Sarcocystis* that infects humans and a large range of domestic animals.

Humans can act as a definitive host for two *Sarcocystis* species; their intermediate hosts are cattle (*S. hominis*) and pigs (*S. suihominis*). The overall infection prevalence of *Sarcocystis* spp. among slaughtered cattle in Tunisia was 38%. Two species were identified, namely *S. hominis* (25%) and *S. cruzi* (12%). *Sarcocystis* spp. infection prevalence was also found in both Tunisian sheep (58.6%) and goats (50.4%) (Figure 1). *Sarcocystis tenella* and *Sarcocystis capracanis* were identified as species infecting sheep and goats, respectively.

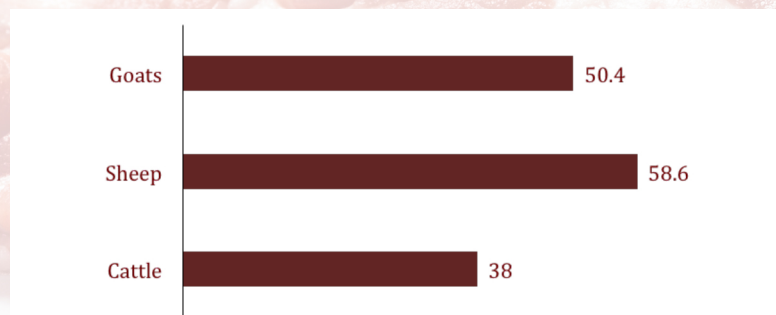


Fig. 1. Molecular prevalence of *Sarcocystis* spp. in ruminant's Tunisian meat

Neospora caninum

The overall *N. caninum* infection prevalence rate in cattle and sheep were 22 and 10.6% respectively (Figure 2). To our knowledge there is only one molecular detection of *N. caninum* in meat of sheep and cattle in North Africa.

The molecular prevalence of *N. caninum* was significantly higher in cattle than sheep. Such difference could be explained by the high susceptibility of cattle to *N. caninum* infection (Pan et al., 2004).

The phylogenetic analysis showed that the two sequences from Tunisian cattle (GenBank accession no: KY496699) and sheep (GenBank accession no: KY562727) shared higher homology (96-100%) to many sequences reported in Canada, Southern Chile, Brazil, Spain, China and Australia.

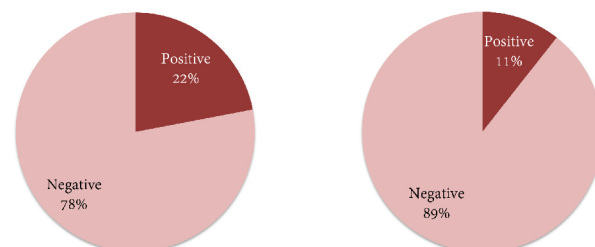


Fig. 2. Molecular prevalence of *Neospora caninum* in Tunisian cattle (left panel) and sheep (right panel)

Toxoplasma gondii

Despite the huge importance of *Toxoplasma gondii* infection as a zoonotic diseases few epidemiological studies were performed in Tunisia. Indeed, Bouarabine et al. (2001) showed that the seroprevalence in humans was 70% in 30 years old tested persons. Molecular infection prevalence varied in sheep between 12.7 and 33.3%; it was estimated to 32.5% in goats and 19.3% in cattle (Figure 3).

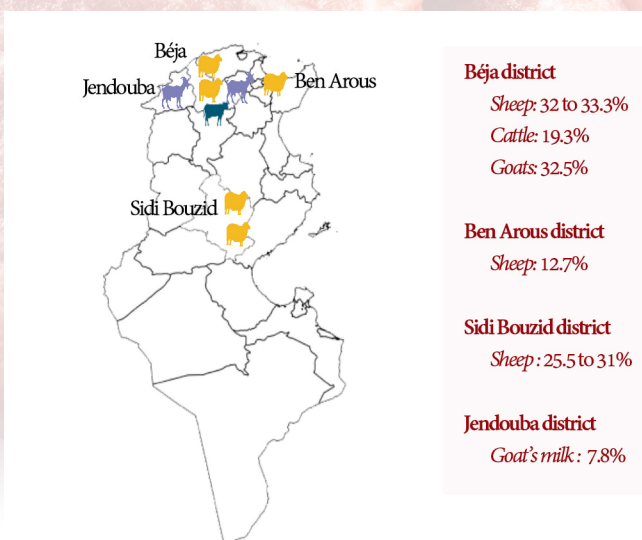


Fig. 3. Molecular prevalence of *Toxoplasma gondii* in ruminant's Tunisian meat from different districts

Conclusion Few studies were published on these three protozoa in Tunisian ruminants; further investigations are needed to improve our knowledge on the epidemiological situation of toxoplasmosis, sarcosporidiosis and neosporosis. These information will allow decision makers to implement suitable control measures.

Extension programmes should be implemented to inform the farmers and the veterinarians about these parasitic infections. Indeed, neosporosis and sarcocystosis are not known at all in Tunisia.

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