Neospora spp. and *Toxoplasma gondii* antibodies in equines from Southern Italy

Machačová Tereza , Bártová Eva

University of Veterinary and Pharmaceutical Sciences Brno, Faculty of Veterinary Hygiene and Ecology, Department of Biology and Wildlife Diseases, Palackého tř. 1/3, 612 42 Brno, Czech Republic

Introduction

Donkeys and horses are farm animal used for their meat or milk in many European countries. In present time, there is an increasing interest on donkeys that are also used for production of their milk which is suitable compensation for children affected with cow milk allergy, however donkeys are also used for therapy of handicapped person (onoteraphy).

Neosporosis and toxoplasmosis are protozoan diseases with definitive hosts dogs and coyotes (*Canis latrans*) in case of *Neospora* spp. and felids in case of *Toxoplasma gondii. A*ntibodies against both parasites could be also found in other animals.

The aim of our study was to monitor *Neopspora* spp. and *T. gondii* antibodies in horses and donkeys in the Southern Italy, compare them with results in others countries and find out hygienic risk of consumption of equine meat.

Material

The sera of 642 horses and 238 donkeys were collected from clinical health animals in Southern Italy during year 2010. General data, including gender, age, breed, use, period of grazing during year, presence of dogs and cats in the farms and their access to water/ food used for donkeys or horses and the presence of other animals in farms were obtained through a questionnaires completed during sample collection. Furthermore, a complete clinical examination was done on every animal.

Picture 1: The places of collecting of samples

Methods

DONKEYS

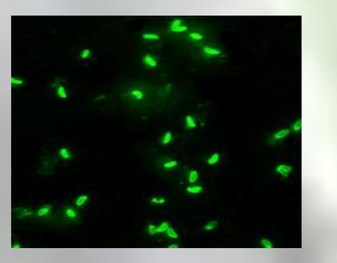
T. gondii **antibodies were detected by commercial latex agglutination test (LAT) and by the indirect fluorescent antibody test (IFAT) using a commercially available antigen (VMRD, Pullman, USA) and species-specific conjugates anti-horse IgG immunoglobulin (Sigma Aldrich). The sera were diluted in a two-fold series starting at 1:50 as a basic dilution. The titre ≥50 was considered positive. Neospora spp. were detected by commercial competitive-inhibition enzyme-linked immunosorbent assay (cELISA, VMRD) with cut off ≥30% inhibition.**

HORSES

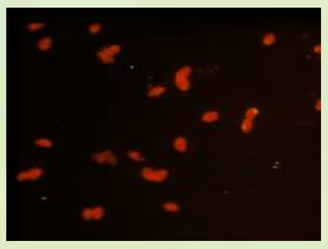
T. gondii **antibodies were detected by IFAT (see above).**

Neospora spp. antibodies were detected by cELISA (see above) and by an indirect fluorescence antibody test (IFAT) using a commercially available antigen (VMRD) and species-specific conjugates anti-horse IgG immunoglobulin (Sigma Aldrich). The sera were diluted in a two-fold series starting at 1:50 as a basic dilution. The titre ≥50 was considered positive.

IFAT-positive samples



IFAT-negative samples



Results

DONKEYS

T. gondii **antibodies were found in 12 /238 (5%) and 19/238 (8%) donkeys by LAT and IFAT, respectively. Antibodies against *Neospora* spp. were found in 28/238 (11.8%) donkeys by cELISA with inhibition ranging from 30.07% to 44.34%.**

HORSES

T. gondii **antibodies were found in 18/642 (2.8%) horses using IFAT. *Neospora* spp. were found in 15/642 (2.3%) horses by IFAT and 67/642 (10.4%) by cELISA with inhibition from 30.01% to 83.9%.**

Disscusion

Table 1: Seroprevalence of *T. gondii* and Neospora spp. in donkeys and horses in some chosen countries

Country	Prevalence	Reference
	***T. gondii* in donkeys**	
Spain	25.6% of 25	Garcìa-Bocanegra et al. (2012)
Turkey	11% of 100	Zeybek et al. (1998)
Egypt	65.6% of 121	El-Ghaysh et al. (1998)
Egypt	45% of 100	Haridy et al. (2010)
	***T. gondii* in horses from Italy and France**	
Italy	16% of 12	Polidori et al. (1993)
Italy	30.7% of 163	Tassi et al. (2006)
	Neospora spp. in horses from Italy and France	
Italy	28% of 150	Ciaramella et al. (2004)
Italy	10% of 297	Piantedosi et al. (2009)
France	23% of 434	Pitel et al. (2001)

Conclusion

- **According to our study the prevalences of *T. gondii* and *Neospora* spp. In equine (donkeys and horses) in Southern Italy are low mainly in the case of Italian horses.**
- **Eguine meat from Southern Italy is not important source of *T. gondii* and *Neospora* spp. infection.**

This study was funded by the grant from the Ministry of Education, Youth and Sports of the Czech Republic (MSM6215712402), from IGA VFU Brno, Czech Republic (6/2012/FVHE) and from the Ministry of Health of the Italian Republic (IZSME 05/10 RC C71J1000012000).