



Evaluation of hedgehogs as sentinels species for *Toxoplasma gondii*

Núria Rodríguez Llorente. Facultat de Veterinària, Universitat Autònoma de Barcelona, 08193 Bellaterra, Spain

INTRODUCTION

Toxoplasma gondii is an intracellular protozoan of worldwide distribution and with potentially severe health impacts both for humans and animals as all warm-blooded species can virtually be intermediate hosts. In felines, the only definitive hosts for *T. gondii*, oocysts are produced and shed in the feces (1). European hedgehog (*Erinaceus europaeus*) and African hedgehog (*Atelerix algirus*) are small mammals of wide distribution among Iberian Peninsula and Balearic Islands (2). Due to their proximity to urban zones and wild habitats these insectivores are in close contact with humans, domestic animals and wildlife.

The aim of this study was to determine the potential use of European and African hedgehog as sentinels for *Toxoplasma gondii*.

MATERIAL AND METHODS

64 samples of European hedgehog (*E. europaeus*) were collected from Catalonia and 63 samples of African Hedgehog (*A. algirus*) came from Catalonia (n=7) and Balearic Islands (n=56).

Serum samples from spleen

Serological analysis: modified agglutination test (MAT)

Central nervous system and cardiac tissue

Molecular analysis: Real Time PCR

RESULTS

Table 1. Seroprevalence of *T. gondii* (MAT \geq 1:25) and detection of the parasite in European and African hedgehog.

Species	Region	MAT		rtPCR	
		Analyzed samples	Positive samples	Analyzed samples	Positive samples
<i>E. europaeus</i>	Catalonia	0	0	40	0
<i>A. algirus</i>	Catalonia	5	2 (40%)	3	0
<i>A. algirus</i>	Balearic Islands	42	20 (47,62%)	14	2 (14,29%)

DISCUSSION

The seroprevalence of *T. gondii* in hedgehogs from Majorca is higher than those from Catalonia suggesting a widespread contamination due to the oocyst shed by feral cats (*Felis silvestris catus*). There is a high population of feral cats in Majorca (3). The diet of these cats, based on birds and small mammals, and the Mediterranean climate, that could favors survival of oocysts, could explain the maintenance of the parasite in the island and the high seroprevalence found among these felines.

The seroprevalence of *T. gondii* in insectivores is lower than in wild carnivores of the Majorca Island and the Iberian Peninsula. Due to accumulative ingestion of infected meat from other animals, it is more probable that carnivorous have higher prevalence of antibodies against *T. gondii* than omnivorous, herbivorous and insectivorous species, whom have less exposition to oocysts and bradyzoites.

Little is known about the genetic diversity of *Toxoplasma gondii* in wildlife and recently new genotypes with high pathogenicity has been described. Molecular studies would be useful for establishing the genotypes circulating among hedgehogs population and its relation with wildlife, domestic animals and cats.



CONCLUSION

- The presence of *T. gondii* as well as the high seroprevalence against the parasite in the African hedgehog suggest a widespread distribution of the organism among Mediterranean region.
- The results of the present study demonstrate the potential of African hedgehog as a sentinel for *Toxoplasma gondii* and encourage to realize future studies about the parasite in these populations.

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