

## Genotyping of *Toxoplasma gondii* in domestic animals from Campeche, Mexico reveals virulent genotypes shared with South America

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**Background.** The prevalence of *T. gondii* in México is 43.9% in the human population, being the Neotropical region with the highest rate of antibodies against this parasite. Campeche is one of the South-eastern Mexican states that has favourable climatic conditions for the replication and dissemination of this protozoan. Studies of this zoonotic agent in this state are scarce; thus, identifying the presence of this parasite in sentinel hosts such as dogs (*Canis familiaris*) and free-range chickens (*Gallus gallus*) will allow us to understand its epidemiological dynamics in the study site.

**Objective.** To identify, isolate and genotype *Toxoplasma gondii* parasites obtained of blood samples and target tissues of stray dogs and free-range chickens from Campeche, México.

**Material and methods.** Eleven stray dogs and eight free-range chickens from Escárcega and Calakmul, respectively, both municipalities of Campeche, were captured and euthanized to collect blood and tissue samples. The determination of IgG anti-*T. gondii* antibodies in serum samples of dogs was performed by ELISA and western blot. Free-range chickens did not undergo serology. The presence of the parasite DNA was determined by endpoint PCR and qPCR. Parasite isolates were obtained by bioassays in mice, and the genotyping was performed by PCR-RFLP using the panel of 11 typical markers plus 5 PCR-RFLP virulence markers.

**Results.** Detection of IgG anti-*T. gondii* antibodies in dog sera was 72.7% and 100% by ELISA and western blot, respectively. Six of eleven dogs were positive by endpoint PCR and by qPCR. Two isolates from a dog were obtained, one from the brain and the other from the heart/diaphragm mixture, both resulting in the ToxoDB #116 genotype. Also, two isolates from heart and brain of a free-range chicken were also obtained, being the ToxoDB #38 genotype. Considering the combination of results obtained for the virulence markers, particularly for *ROP18/ROP5*, a high virulence is predicted for two isolates and two remain unknown due to the description of a new *ROP5* RFLP pattern.

**Conclusions.** The use of more than one laboratory technique conforms and improves the comprehensive diagnosis of *T. gondii*, proposing new diagnostic approaches in several definitive and intermediate hosts of this parasitosis. ToxoDB #38 and #116 genotypes were found in free-range chickens and stray dogs, respectively. The latter having a previously unreported atypical virulence genotype that could be endemic of this region of México. Campeche state has environmental conditions that favour the *T. gondii* genetic diversity.

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