

National Conference on Zoonoses

22,23 Feb 2017 - Isfahan, Iran



Detection of *Toxoplasma gondii* in stray Cats (*Felis catus*) of Tehran using GRA6 gene

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Abstract

Toxoplasmosis is an endemic disease worldwide and a major public health concern for humans and domestic animals. It is caused by the parasitic protozoan *Toxoplasma gondii*. Cats and wild felidae play a crucial role in the epidemiology of this disease; they are the only definitive hosts and are therefore the only ones to shed oocysts in their faeces. It is generally assumed that cats play a major role in transmitting *T. gondii* through the faecal contamination of soil, food or water since they may excrete millions of oocysts over a period of 1–2 weeks. Rather than the consumption of raw or undercooked meat, the ingestion of vegetables or water contaminated with oocysts is currently thought to be the most common route via which humans become infected. It is therefore important to detect cats that are shedding oocysts if control of the disease is to be achieved. In this study the prevalence of *Toxoplasma gondii* was surveyed by using a nested polymerase chain reaction (nPCR) that was targeted to *T. gondii* GRA6 gene in stray cats. Biological samples were collected from 50 stray cat that died in accidents or other reasons were collected from different areas of Tehran. The brain of each cat was then removed for direct parasite detection in sterile condition and DNA was extracted with phenol-chloroform method. The 344 bp of GRA6 gene amplified by Nested-PCR method to confirm the presence of *Toxoplasma gondii* DNA. Results showed, 25/50 cats (50%) were infected with *Toxoplasma gondii*. This study used brains from stray cats for direct detection since this organ is that most frequently affected. PCR is a sensitive, specific and rapid alternative for detecting *T. gondii*; Indeed, PCR can detect the DNA of parasites even when the tissues available for testing are in state of decomposition. Because of high occurrence of *T. gondii* infection in cats in this study, cats may play a serious role in human and other mammalian toxoplasmosis in Tehran.

Key words: *Toxoplasma gondii*, nested-PCR, GRA6, stray cats