

Toxoplasma gondii in water supplies of the Qinghai-Tibet Plateau in China

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INTRODUCTION. *Toxoplasma gondii* is a cosmopolitan protozoan parasite that causes toxoplasmosis – one of the most prevalent parasitic infections in humans. The disease is generally asymptomatic in immunocompetent individuals; however, it may take a severe course in immunodeficient patients and in immature foetuses and infants, if the mother suffered from primary infection during pregnancy. One of the important routs of infection in humans is ingestion of oocysts excreted by infected felids to the environment (water, soil, air, raw fruit and vegetables) (Cook et al. 2000; Dubey et al. 1996; Fayer et al. 2004, Lass et al., 2009, 12, 17). In China, the estimated average prevalence rate of *T. gondii* infection was 7-12.3%, depending on the region (Xiao *et al*. 2010) and shows increasing trend. There are very limited data on the detection of this parasite in the environment, and no studies related to the presence of *T. gondii* and its genotypes in fresh vegetables intended for consumption in China.

Aim of the study. The aim of present study was to estimate the possible occurrence of *T. gondii* in wastewater samples collected from Qinghai Province, P.R. China via real-time PCR as well as to determine the genotype of obtained *T. gondii* isolates.

MATERIAL AND METHODS. A total of 188 wastewater samples were collected from two WWTPs (Huangyuan WWTP and Xining WWTP) and a slaughterhouse between January and October 2016 at various sites located in the Qinghai part of QTP, Western China. In order to recover and concentrate T. gondii oocysts Al2 (SO4)3 – flocculation was applied and material obtained was analysed using real-time PCR assay targeting the B1 gene for specific T. gondii detection. Positive samples were sequenced and genotyped with multilocus PCR–RFLP assay with selected genetic markers: SAG1, SAG2, SAG3, BTUB, GRA6, C22-8, c29-2, L358, PK1 and Apico (Su *et al*., 2010, 2006; Ferreira *et al*. 2011).

RESULTS. *T. gondii* DNA was found in four (2 %) samples investigated, including three samples collected from WWTPs and one sample collected from the slaughterhouse. Sequencing of positive water samples displayed that the obtained nested PCR products were fragments of the *T. gondii* B1 gene. Multilocus genotyping of positive water samples showed presence of *T. gondii* type I. The results of the study confirmed that *T. gondii* is present in various waters sources in the Qinghai part of QTP in China and this contamination may be a potential source of *Toxoplasma* infections in humans and animals in the investigated area.

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