Prevalence of Toxoplasma gondii and Neospora caninum contaminations in poultry eggs: molecular surveillance in three different geographical regions of Iran

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Abstract

Background: Toxoplasma gondii and Neospora caninum are important protozoan parasites with worldwide distribution among warm-blooded animals. Moreover, T. gondii is a zoonotic parasite that infects humans. Poultries are important intermediated hosts of T. gondii and N. caninum. However, little is known about the contamination of poultry eggs with these parasites. We aimed to investigate the molecular frequency of T. gondii and N. caninum among the eggs of chicken, domestic duck, and quail from three different geographic regions of Iran. T. gondii and N. caninum were detected by PCR targeting the RE and Nc5 genes, respectively.

Findings: Overall contamination rates with T. gondii and N. caninum were 10.7 and 5.9, respectively. The overall contamination rates of T. gondii among chicken, duck, and quail were 12.2, 15.5, and 4.4, respectively; while N. caninum was detected in 11.1, 3.3, and 1.1 of the same samples, respectively. The contamination rates were increased with increasing humidity across three different regions.

Conclusions: Taken together, this study indicates the contamination of poultry eggs with T. gondii and N. caninum. The possibility of egg-born transmission of T. gondii should not be neglected by consuming raw soft-boiled eggs. Furthermore, contamination of poultry eggs could be an indicator for environmental contamination by these parasites.

Keywords: *Chickens, Ducks, Eggs, Humidity, Neospora caninum, Poultrym, Quails, Toxoplasma gondii*