

Summary of the PhD thesis No. 12008, Faculty of Veterinary Medicine, Urmia University.

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Title of Thesis: Morphological and molecular description of *Trichobilharzia* species in the snails *Lymnaea auricularia*, *Lymnaea palustris* and *Physa acuta* and their relationship with the population distribution of these snails in Guilan province.

Summary:

Some freshwater snails are considered as intermediate hosts of human and livestock parasite trematodes. Therefore, the investigation of important epidemiological indicators related to freshwater snails provides the possibility of collecting information about the sources of pollution. *Trichobilharzia* genus is one of the etiological agents of schistosoma in birds in Guilan province. The purpose of the present study was to investigate the morphology and molecular structure of *Trichobilharzia* species in snails of the Lymnaeidae and Physidae families and the effect of climatic characteristics and some physicochemical characteristics of snail habitats (water resources) on their abundance and biological distribution in Guilan province. During one year, from a total of 85 investigated areas in Guilan province, freshwater snails of the Lymnaeidae and Physidae families were collected and identified. Water samples were taken from the studied areas to check the physicochemical properties of water. The collection and identification of Cercariae pollution in snails was done by shedding method. Identification of *Trichobilharzia* Cercariae was done by Microscopic and Molecular methods of mitochondrial (COX1) and ribosomal (ITS1) locations. Out of 39,486 collected snails, 19,726 were *Lymnaea auricularia* (49.96%), 4911 were *Lymnaea palustris* (12.44%), and 14,849 were *Physa acuta* (37.6%). The salinity and electrical conductivity of water had a significant relationship with the population of snails. In the microscopic and molecular study, 74 snails (0.18%) were infected with *Trichobilharzia* Cercariae. Molecular findings confirmed the presence of *Trichobilharzia franki* (0.16%) and *Trichobilarzia regenti* (0.02%) species. In the studied *Trichobilarzia* species, the genetic diversity in the ribosomal locus was higher than the mitochondrial locus. At the ribosomal locus, *Trichobilarzia franki* had 8 haplotypes and *Trichobilarzia regenti* had 7 haplotypes. In the mitochondrial locus, *Trichobilarzia franki* had 8 haplotypes and *Trichobilarzia regenti* had 2 haplotypes. The frequency of *Trichobilharzia* infection in *Lymnaea auricularia* was 0.37%, and the frequency of *Trichobilharzia* infection in snails under study had a significant difference with temperature, salinity and electrical conductivity of water. The highest and lowest frequency of *Trichobilharzia* infection was in spring (80%) and autumn (4.4%), respectively. According to these findings, it is recommended to study the role of migratory waterfowl in the transmission of *Trichobilharzia* infection to native birds and residents, as well as planning to prevent contamination in the northern provinces of the country.

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Key words: *Trichobilharzia*, Snail, *Lymnaea auricularia*, *Lymnaea palustris*, *Physa acuta*, Guilan