## Abstract

Bird schistosomes of the genus *Trichobilharzia* are known as causative agents of hyper-immune skin reaction called cercarial dermatitis (swimmer´s itch). They use pulmonary water snails from family Lymnaeidae as the intermediate host and mostly anatid birds as the definitive host. The first larva, miracidium, actively moves in water environment, penetrates the snail and develops to the mother sporocyst. Then the daughter sporocysts are formed and migrate to the hepatopancreas of the snail where the high number of cercariae is assexually produced. Cercariae leave the intermediate host, actively move in a water and penetrate the skin of definitive host. Within a host body they mature and lay eggs. Cercariae can penetrate also the mammalian skin, including human, where they are immediately eliminated by the immune system of the host, which is followed by inflammatory reaction. Until now, for humans, there is no effective method enabling to differ cercarial dermatitis from other hyper-immune skin reactions and for birds the reliable diagnostic method of trichobilharziasis is missing.

The main aim of this thesis was to use the molecular methods for diagnostic of bird schistosomes infection in natural (ducks) and accidental hosts (mice, human). For optimization, the conventional PCR was used for detection of 396 bp tandem repeated DNA sequence of *Trichobilharzia regenti* and *T. szidati* in the hemolymph of intermediate hosts *Radix lagotis* and *Lymnaea stagnalis*. Subsequently, the qPCR was applied for the detection of parasite DNA in sera samples of experimentally infected ducks, mice and accidentally infected humans. The detection of parasite DNA in the hemolymph of infected snail was successful, but in the case of sera samples only partial success was achieved.



Keywords: Molecular diagnostics, *Trichobilharzia*, cell-free DNA