

ABSTRACT

The class Trematoda includes many pathogenic representatives. Main subject of this thesis, avian schistosome *Trichobilharzia regenti*, is a close relative to the important human pathogen *Schistosoma mansoni* (family Schistosomatidae).

In vitro cultivation of trematodes enables closer understanding of their biology and parasite-host interactions; however, no trematode species has been successfully kept *in vitro* from the egg stage to the adults producing eggs. Many studies are focused on the problematic of *S. mansoni* cultivation, but data concerning *T. regenti* cultivation remain scarce. Only the ability of *T. regenti* cercariae to transform into schistosomula *in vitro* was documented, with following survival in a culture medium for a few days.

Comparison of eight transformation methods was performed with *T. regenti* cercariae. Based on the number of tailless cercarial bodies obtained, five transformation methods were selected for further evaluation of the early schistosomula characteristics (glycocalyx shedding, penetration glands emptying and survival *in vitro*). It was observed that the largest quantity of cercarial bodies can be obtained by using a syringe needle or the BeadBeater cell disrupter. The largest quantity of schistosomula meeting the criteria of early schistosomulum was recorded after transformation of cercariae by penetration of the duck skin.

Viability of schistosomula in four different cultivation media was evaluated to find the optimal one for long-term cultivation. Also, the media supplements, such as red blood cells and duck serum were tested. The complete media SCM and ASCM were experimentally selected for long term cultivation. The addition of duck serum, in contrast to red blood cells, stimulated faster growth of schistosomula, gut development and prolonged *in vitro* survival, but the progress in these parameters was still delayed compared to *in vivo* developing schistosomula.

This thesis brings new information about *T. regenti* cercaria/schistosomulum transformation methods and subsequent long-term *in vitro* cultivation of schistosomula.

Keywords: *Trichobilharzia regenti*, *Schistosoma mansoni*, cercaria, schistosomulum, transformation, cultivation, development, penetration glands, glycocalyx, gut, growth, viability