

## Abstract

*Trichobilharzia* spp. are avian schistosomes related to medically important human parasites of the genus *Schistosoma*. Penetrating cercariae are well known as causative agent of cercarial dermatitis in humans.

Cercariae actively penetrate the skin of definitive hosts and transform into schistosomula. This process is preceded by cercarial tail detachment and includes emptying of penetration glands and extensive surface changes. One of these changes is the loss of highly immunogenic glycocalyx which represents a protective coat in the aquatic environment. The glycocalyx has specific composition of saccharide molecules which are bound to lipids or proteins on the membrane of cercarial tegument. There is only limited information about the mechanism of shedding. Hypotheses based on indirect evidences suggest that peptidases or (phospho)lipases from penetration glands could be involved.

This work describes the changes in surface glycosylation during transformation of cercariae into schistosomula by fluorescently labelled lectins and monoclonal antibodies against Lewis X antigen. Lectins UEA-I, LTA and PNA have been chosen as markers of transformation of *T. regenti*.

Further, our experiments have been focused on shedding of cercarial glycocalyx. During *in vitro* induction of penetration gland emptying and staining of the gland content, we observed strong binding of the circum- and postacetabular secretions to the surface of cercariae of *T. szidati* and *T. regenti*. The cercariae were able to shed this material from their surface within a short time. The reactivity of cercariae with fluorescent lectins binding to their surface dramatically changed comparing the situations before and after induction of gland emptying. After the reaction with gland content, the surface did not bind these lectins anymore; this means that the glycocalyx has been shed. This process is also induced by lectins alone, especially with those possessing fucose specificity.

In context with previous experiments we tested an active recombinant form of cathepsin B2 present in postacetabular glands of cercariae and the cysteine, serine or metallopeptidase inhibitors for their ability to trigger and inhibit glycocalyx shedding, respectively. For further research of molecules putatively involved in this process, the proteome of cercarial penetration glands is being characterized.