## ABSTRACT

Nitric oxide (NO) has been proved to reduce parasite burden in vertebrates infected with *Schistosoma*, *Fasciola*, *Brugia* or *Taenia*. NO negatively influences parasite growth and development, which then leads to smaller parasite-caused damage to the liver during schistosomosis and stimulates healing processes in muscles infected with *Toxocara canis*. Peroxynitrite, formed from NO and superoxide, significantly reduces the viability of *F. hepatica* adults. In case of *T. regenti*, the neuropathogenic schistosome, the cells capable of NO production (macrophages, neutrophils, eosinophils, microglia and astrocytes) migrate to the site of the infection suggesting that NO might affect *T. regenti* infection as well. Therefore, the production of NO and its effect on the course of the infection was examined *in vivo* and the effect of peroxynitrite on *T. regenti* schistosomula was examined *in vitro* to assess the role of reactive nitrogen species during the infection. Our results from *in vivo* experiments demonstrate that although the infection did not significantly elevate nitrite/nitrate results in the sera, NO is locally produced in the early stages of the infection in both the skin and the spinal cord as shown by immunohistochemical detection of inducible NO synthase. Diminishing NO production by aminoguanidine treatment did not reveal any significant effect of NO neither on worm burden nor nervous tissue pathology, particularly demyelination. I*n vitro* experiments revealed that peroxynitrite significantly reduced schistosomula viability and severely damaged the integrity of tegument and mitochondria, which was assessed by measurement of lactate production and electron microscopy, respectively. Based on our results, we hypothesize that NO influences *T. regenti* infection in mice only in the early stages later leaving the parasite clearance to other immune effectors, possibly Th2 related. Taken together, this thesis has made a step in recognizing the effector molecules of *T. regenti* clearance in mice.

**Keywords**: nitric oxide; *Trichobilharzia regenti*; skin; spinal cord; inducible NO synthase; 3-nitrotyrosine; aminoguanidine; peroxynitrite