

Curcumin induced biochemical and tegumental surface changes in a digenetic fluke : *Clinostomum complanatum*.

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Alternative therapeutic approaches are being considered very important due to the emerging drug resistance against the commonly used anthelmintics. Curcumin a biologically active ingredient of *Curcumin longa* may turn out to be a promising compound as anthelmintic whose therapeutic potential in different ailments is known through various *in vitro* and *in vivo* experiments. In the present study “Curcumin” was assessed for its anthelmintic potential against a model digenetic trematode, *Clinostomum complanatum* also a potent zoonotic parasite. The adult worms normally infect the pharyngeal region of ardeid birds and their excysted progenetic metacercarial form with quiescent gonads infects *Trichogaster sp.* and other economically important fishes and the reports of acute pharyngitis, laryngitis and eye infection in human also been reported.

Progenetic metacercariae of *Clinostomum complanatum* were collected from, *T. fasciatus* and *in vitro* incubated in different concentration of curcumin along with control group without the test drug. Worm motility was observed post incubation every 30 minutes till 6 hours. Worms were further processed for tegumental surface changes, production of reactive oxygen species, reduced Glutathione assay, glutathione-S-transferases and superoxide dismutase activity. Polypeptide profile of somatic and *in vitro* released excretory/secretory products of the treated parasites was generated to evaluate the anthelmintic potential of curcumin.

Concentration dependent inhibition in the worm motility was observed. Treatments of worms with curcumin influenced the production of ROS and altered levels of detoxification and antioxidant enzymes and the tegumental surface structures as revealed by scanning electron microscopy, coupled with the changes in the proteolytic activity which might affect the virulence and the successful establishment of the parasite within the host. Based on the present results it is indicated that the anthelmintic potential of curcumin could be further validated using molecular tools and more species of the trematodes before taking up the *in vivo* investigations.