In vivo schistosomicidal effects of the beta-lapachone complexation in 2-O-dimethyl-β-cyclodextrin on *Schistosoma mansoni*

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The schistosomiasis remains a neglected disease. Currently, the praziquantel (PZQ) it is the only drug used for the treatment and its intense use alert to the emergence of resistant strains. In this sense, our group explores the potential schistosomicidal, *in vitro and in vivo*, ß-lapachone (β-lap) and pharmaceutical formulations in schistosomicidal therapy. This study evaluated the schistosomicidal action, *in vitro*, the β-lap complexed in β-cyclodextrin. Couples of adult worms were collected from mice previously infected with 150 cercariae of *S. mansoni*. The worms were distributed in 24-wells culture plates containing RPMI-1640 medium supplemented then incubated (37°C and 5% CO2) in concentrations of 200, 100, 50, 25 and 12.5, and 6.5 μM of β-LAP + β- cyclodextrin. Positive control was exposed to PZQ and negative in RPMI-1640 supplemented. The worms were monitored after 24 hours to evaluate the motor activity and mortality. Worms negative control exhibited typical movements without mortality. PZQ caused paralysis, shortening and 100% of mortality in 24 hours. β-lap/β-cyclodextrin in the concentrations of 200 and 100 μM caused uncouple, stretching, blistering and desquamation in the tegument and 100% mortality. The concentration of 50 μM caused 60% mortality and 40% showed uncouple, decreased movement and bubbles. In the concentration of 25 uM, 24% exhibited movements in the extremities and blisters and desquamation, 35% not adhered to the plate and exhibited reduced movement. Already at concentrations of 12.5 and 6.5 uM presented adhered to the culture plate and more intense movements than the control group. Studies have shown that naphthoquinones exhibit antiparasitic activity including anti-malarial, trypanocidal and schistosomicide. In addition, ß-lap is effective against different developmental stages of S. mansoni, reducing the parasitic load and eggs in the liver and reduce the granulomatous inflammation and the density and size of hepatic granulomas.

Key words: schistosomiasis, therapeutic innovation, ß-lapachone.

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