The use of silybin nanoparticles as a complementary treatment of schistosomiasis experimental infection

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Schistosomiasis in Brazil is caused by *Schistosoma mansoni* and is an important public health problem. Among the complications of this infection are hepatosplenomegaly, hepatic fibrosis and portal hypertension. About 50% of the eggs released by the adult female follow into circulation and are deposited, mainly, in the liver. This phenomenon triggers the formation of granulomas and, subsequently, produces liver fibrosis. The hepatoprotective, immunomodulatory and antifibrotic function of silybin have been demonstrated in some studies. Thus, the study aims to evaluate the action of nanoparticles of ε-polycaprolactone containing silybin on the reversal of the sequelae of schistosomiasis, analyzing the hepatic damage, fibrosis and hepatosplenomegaly of the infected animals in the chronic phase of the disease.

BALB /c mice with 6-8 weeks age were infected with 80 cercariae of *S. mansoni* BH strain. In the chronic phase (90 days of infection), the animals were treated with praziquantel (500 mg/kg/day for 2 days) in order to eliminate the parasites. Subsequently, the experimental groups were divided into: animals treated with silybin in carboxymethylcellulose (CMC), silybin in ε-polycaprolactone (PCL) and with empty PCL (without silybin) given orally at a dose of 10 mg/kg every 7 days for 60 days. After treatment, the animals were euthanized. Organs such as liver, intestine and spleen were weighed. Digestion of the liver, intestine and spleen were performed in order to estimate the parasitic load. Hepatic injuries markers were also evaluated by serum levels of Aspartate aminotransferase and Alanine aminotransferase (AST/ALT). In addition, throughout the study the animals' weight and survival curve were monitored. Some

evaluations are still ongoing such as hydroxyproline dosing, silybin nanoparticle release assay and stability assay.

Animals at chronic phase of schistosomiasis mansoni were treated with praziquantel and after this received treatment with silybin nanoparticles it was showed a decreased serum levels of hepatic injury markers. In addition, it was observed that groups which received silybin had an increased survival in comparison with animals that just received praziquantel.