

IMMUNOLOGICAL EFFECTS OF *SOLANUM INCANUM* AND *CARICA PAPAYA* EXTRACTS IN SWISS MICE INFECTED WITH *SCHISTOSOMA MANSONI*.

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ABSTRACT

Schistosomiasis is a chronic parasitic disease in tropical and subtropical regions and is associated with a variety of clinical syndromes that may lead to severe morbidity. Despite the existence of the highly effective antischistosome drug praziquantel (PZQ), schistosomiasis is spreading into new areas, and although it is the cornerstone of current control programs, PZQ chemotherapy does have limitations. In particular, mass treatment does not prevent reinfection. Furthermore, there is increasing concern about the development of parasite resistance to PZQ in addition to its high cost, hence a need for an alternative drug. Additionally, the drug has two major administration drawbacks, first being the high dose needed, and its well documented bitter and disgusting taste. Many plant species have been used worldwide in traditional medicine for the treatment of human helminthes but few have been screened for activity against adult *Schistosoma* sp. This study therefore sought to determine the effectiveness of *Solanum incanum* and *Carica papaya* extracts as possible novel antischistosomal agents. For each of the plant species, both aqueous [*Solanum incanum* aqueous (SIA) and *Carica papaya* aqueous (CPA)] and methanol [*Solanum incanum* methanol (SIM) and *Carica papaya* methanol (CPM)] extracts were used. A total of 114 mice were used in the study out of which 72 were in the experimental groups; 18 in the positive control group and 24 in the infected control group. Mice in groups of six were individually infected with 250 *Schistosoma mansoni* cercariae. Four weeks post infection, they were orally treated with 300mg/kg of *Solanum incanum* and *Carica papaya* extracts two days apart and at week six, all animals were perfused to evaluate the efficacy of *Solanum incanum* and *Carica papaya*

in treatment of the infection. The following were also performed: Sampling for blood, spleen and lymph node cells; ELISA and gross pathology. The results obtained showed a 16.7 % maturation of penetrant cercariae. Indeed both the extracts had immunological effects in swiss mice infected with *Schistosoma mansoni*. but however, the *Solanum incanum* extracts had the greatest effect on worm reduction, worm recovery and IgG specific immunological responses compared to *Carica papaya*. The *Solanum incanum* aqueous group recorded the highest worm reduction of 46.3% compared to control infected animals where a percentage worm recovery of 53.7% was observed. The *Solanum incanum* stimulated high IgG levels signifying a high protective immunity and it was significantly different from the Infected control group ($p < 0.05$). The *Solanum incanum* extracts comparably showed similar IL-5, IFN- γ responses and gross pathology to PZQ than *Carica papaya*.

