J Infect Dis Ther 2018, Volume 6
DOI: 10.4172/2332-0877-C3-045

Trypanosoma congolense versus geranylacetone: *In vivo* activity with *in vitro* and in silico antisialidase studies

Saad Bello Saad, Mohammed Auwal Ibrahim and **Isah Danladi Jatau**
Ahmadu Bello University, Nigeria

The menace of animal trypanosomiasis, especially caused by *Trypanosoma congolense*, still wreaks havoc in the livestock industry of the African continent which demands concerted efforts aimed at reducing the disease burden. An important strategy targeted against the disease is the use of chemotherapeutic agents but the presently available approved drugs are no longer effective which necessitates the search for novel agents. In the present study, geranylacetone was investigated for *in vivo* activity against *T. congolense* infected rats as well as the effects on trypanosome-induced pathological changes and *in vitro* and in silico anti-*T. congolense* sialidase activity. At a dose of 100 mg/kg bw, geranylacetone significantly ($P<0.05$) decreased the number of *T. congolense* in infected animals whilst an insignificant ($P>0.05$) reduction was observed with 50mg/kg bw of the compound. Furthermore, the compound was able to reverse the *T. congolense*-induced anemia and organ damages as evidenced by the significantly ($P<0.05$) lower values of packed cell volumes as well as hepatic and renal functions parameters in the treated group compared with infected untreated animals. Considering the crucial role of anemia in the pathogenesis of the *T. congolense* infection, the effects of geranylacetone on the T. congolense sialidase was further probed using *in vivo*, *in vitro* and in silico approaches. The *in vitro* studies suggested that the compound inhibited purified bloodstream *T. congolense* sialidase using an uncompetitive inhibition pattern. The mode of binding and critical interactions alongside the relevant amino acids were predicted using the molecular docking. We concluded that geranylacetone is also another molecule with therapeutic potency against *T. congolense* and could be added into the library of compounds with validated *in vivo* activity against trypanosomes for further studies as possible next generation trypanocides.

mauwalibrahim@gmail.com