ABSTRACT

This study assessed acute and chronic toxicity, and inhibition of oogenesis and embryogenesis in the cattle tick, *Boophilus microplus* Canestrini, by the crude extracts (CE) of *Hibiscus rosa-sinensis* L. (*Hr*), *Azadirachta indica* A. Juss (*Ai*), *Dioscorea polygonoides* L., *Simarouba glauca* Aubl. (*Sg*), *Annona muricata* L. (*Am*), (*Dp*) and *Cycloptis semicordata* L. (*Cs*) and their hexane (C_6H_{12}), dichloromethane (CH_2Cl_2), ethyl acetate (EtOAc), methanol (MeOH) and water (H_2O) fractions.

Acute toxicity (96-hr Ld_{50}) of the crude extracts and their fractions was in the order: *Hr*, EtOAcF > *Hr*, CH_2Cl_2F > *Ai*, CH_2Cl_2F > *Am*, $C_6H_{12}F$ = *Am*, H_2OF = *Dp*, CE = *Sg*, EtOAcF > *Hr* and *Ai*, CE = *Sg*, *CE* = *Cs*, CH_2Cl_2 > *Ai*, *Hr* and *Dp*, $C_6H_{14}F$; = *Dp*, CH_2Cl_2F; *Dp* and *Sg*, EtOAc; *Ai*, *Hr*, *Dp*, MeOHF; *Cs*, CE; *Ai* and *Hr*, H_2O.

The rate of toxic action (Lt_{50}) of different dosages of extracts of *Ai* followed the order: CH_2Cl_2, 600 -1000µg = CE, 800 - 1000µg> MeOHF = H_2OF, 1000µg > CE, 600µg > $C_6H_{14}F$, 800-1000µg > CH_2Cl_2F, 200-400µg. A dosage of 400µg of the EtOAc fraction of *Hr* was the fastest acting extract (1.51 days) followed by CH_2Cl_2F, 600-1000µg > EtOAcF, 200µg = CE, 600-1000µg > MeOHF and CE, 400µg. Dosages of extracts of *Dp* had the following trend of activity: CE and CH_2Cl_2F, 800-1000µg > CH_2Cl_2F, 600µg = EtOAcF, 600-1000µg. The most active extracts of *Sg* were: EtOAcF; 1000µg (5.57days) > corresponding dosage of the CE; EtOAcF, 600 - 800µg > CH_2Cl_2F, 800 -1000µg; EtOAcF, 400µg; CE

600µg. For extracts of *Am*, corresponding effects were:C_6H_{14} F and H_2OF, 800-1000µg (7.6 to 12.7 days); MeOHF, 600-1000µg > MeOHF, 200-400µg. Finally, similar effects for extracts of *Cs* were: CH_2Cl_2F, 600 -1000µg; H_2OF, 1000µg followed CE, 800-1000µg and $C_6H_{14}F$, 1000µg.

The CH_2Cl_2 fraction of *Hr* had the most active anti-oogenetic compounds (IOd_{50}: 0.56), followed by EtOAcF of *Hr* > CH_2Cl_2, *Ai* > CH_2Cl_2 *Sg* > C_6H_{14}, *Am* > EtOAc, *Sg* > CE, *Hr* > EtOAc, *Dp* > CE, *Hr* > MeOH, *Ai* and *Hr* > CE, *Ai* and *Dp* = $C_6H_{14}F$, *Sg*, *Ai* and *Hr* and CE, *Am*;CH_2Cl_2F, *Dp;* EtOAc, *Ai* ; H_2OF, *Ai* and *Hr*.

Anti-embryogenetic effects of different extracts of the plants were in the order: *Hr*, EtOAcF > *Sg*, CE > *Hr*, CH_2Cl_2F = *Am*, $C_6H_{14}F$ > *Hr*, CE; *Sg*, EtOAc and CH_2Cl_2F, ; *Ai*, CH_2Cl_2F > *Ai*, CE = *Dp*, EtOAcF; *Ai*, MeOHF ;*Hr*, H_2OF > *Dp*, CE and CH_2Cl_2F = *Sg*, $C_6H_{14}F$ and H_2OF = *Ai*, H_2OF.

The most active compounds of the CH_2Cl_2F of *Hr* separated by column chromatography were eluted with the more polar solvent mixtures. Of the subfractions, compounds of SF5 separated by preparative thin layer chromatography were most potent. Drastic reductions in activity occurred when compounds were further isolated by high performance liquid chromatography. Active compounds were classified as terpenes, sugars or terpene glycosides, phenols and steroids.

Generally, the total protein content in the ovaries of the treated ticks was significantly higher ($p < 0.05$) than in controls. Lipid contents, however, did not vary significantly ($p > 0.05$). Electrophoresis of egg proteins showed 20 bands. Their presence and concentration in the eggs varied during the 12-day oviposition cycle. The eggs oviposited on day 12 had three bands missing and eight bands had reduced concentrations.