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# Alternative Approach for Controlling of *Rhipicephalus (Boophilus) microplus* by Plant Materials

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**Abstract—***Indiscriminate use of the synthetic chemical acaricides accompanied with serious drawbacks leads to the search of alternative, eco-friendly and cost effective sustainable methods for the control of the ticks and tick borne diseases (TTBDs). In this direction, in vitro acaricidal activity of 20 plant materials screened against Rhipicephalus (Boophilus) microplus tick. The selected plant materials were subjected for Soxhlet extraction by using different solvents (ethanol, 50% hydro-ethanol and water). Extracts were screened with 8% concentration for in vitro acaricidal activity against R. (B.) microplus and the mortality was recorded. Among the 20 selected plant materials, ethanolic extract of IVRI/01/S/S/H/1 showed potent acaricidal activity with highest mortality (93.3%) followed by 50% hydro-ethanolic extract of NBA/10/F/2 (70 %) and ethanolic extract of IVRI/01/S/S/C/1 (66.7%). Upon finding best activity, IVRI/01/S/S/H/1 extract was selected and subjected to skin sensitivity test and found non toxic for animal applications as was observed during safety trial. After safety trial extract was fractionated and out of 04 fractions, chloroform (F3) fraction showed highest (100%) in vitro efficacy followed by hexane (F2) fraction (93.3%) after 96 hr of tick immersion test. But keeping in view of low yield of chloroform (F3) fraction during successive fractionation, both chloroform (F3) and hexane (F2) fractions were selected for the further study. Both F2 and F3 fractions were sub-fractionated by column chromatography method using hexane and ethyl acetate at different combination (hexane, hexane (9): ethyl acetate (1), hexane (1): ethyl acetate (1), ethyl acetate and methanol and 5 sub-fractions from each F2 and F3 fractions. Among these ten sub-fractions, ethyl acetate sub-fraction of both F2 and F3 fractions showed 100% in vitro acaricidal potency. Further, in dose dependent efficacy study 0.5 % conc. of F3 ethyl acetate sub-fraction showed 100% after 144 hr of testing. While F2 ethyl acetate sub-fraction showed 100 % efficacy at much lower (0.01 %) conc. at 96 hr of in vitro tick immersion test. The present study indicated that the acaricidal potency produced by the active component(s) of the sub-fractions was moderately high polar in nature among all the constituents present in non polar F2 (hexane).*