Efficacy of Extracts of Melia Azedarach from Different Localities Against Rhipicephalus microplus

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Aim: Evaluate the efficacy of green fruits hexanic extracts of Melia azedarach (Meliaceae) from different municipalities of Goiás and Mato Grosso do Sul, Brazil, against the bovine tick Rhipicephalus microplus.

Methods: Green fruits were collected in Bela Vista de Goiás (16ºS, 48ºW), Campo Grande (20ºS, 54ºW), Caturaí (16ºS, 49ºW), Goiânia (two different places) (16ºS, 49ºW), Morrinhos (17ºS, 49ºW), Pirenópolis (15ºS, 48ºW) and Professor Jamil (17ºS, 49ºW). Dry and powdered fruits were extracted by Soxhlet apparatus using hexane as solvent. The solvent was removed in a rotatory evaporator. Engorged females of R. microplus were collected in bovines naturally infested and used in the tests or incubated at 27ºC and RH > 80% to produce larvae. Larvae were fed on rabbits to produce engorged larvae and nymphs. Engorged females were submitted to immersion tests using five doubly decreasing concentrations from 0.25% to 0.015% of each extract. Engorged larvae and nymphs were immersed in the same concentrations of the best extract (Goiânia). All tests were done in triplicate and a control group was immersed in distilled water. The efficacy against females was based on the comparison between egg conversion and larvae hatchability between treated and control groups. To evaluate the interference in the ecdysis, the engorged immature instars were evaluated every day after treatment.

Results: In the 0.25% concentration, high efficacy, varying from 86.8 to 100% due to inhibition of egg production from 52 to 78% and larvae hatchability from 90 to 100% were observed in five out eight extracts tested. Intermediary efficacy was observed for Caturai (41.8%) and Campo Grande/MS (51.2%) extracts, and the Bela Vista de Goiás extract had insignificant effect against engorged females. There was total inhibition of larval ecdysis and around 60% in the nymphs, in the higher concentration. In both tests, against females and against the ecdysis the effects were dose-dependent.

Conclusions: The results observed demonstrate the effects of M. azedarach in the neuroendocrine system of R. microplus and show its potential to control this tick; as also show the biogeography influence in the chemical composition of the plant. Although the synthesis of substances in a plant is oriented by its genetic characteristics, other factors such as lighting, heat, soil constitution and humidity are also important. Additional studies are been conducted aiming to identify those factors.