

ABSTRACT

Pesticidal properties of selected plant extracts and their formulations.

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Aqueous extracts of kernels of Azadirachta indica (Juss) and leaves of Artocarpus altilis (Park.) and Blighia sapida (Konig.) were 36.5- to 205- fold less toxic than ethanol extracts (CE), to Cylas formicarius elegantulus (Summer) and only 1.3 to 1.8 times less effective against Boophilus microplus (Canestrinii). The LD₅₀ (µg/insect) values of CE of various plants for C. formicarius when treated directly under Potter's Tower were: Az. indica, 0.53 > Ervatamia divaricata, 0.83 > A. altilis, 0.86 > Andropogon citratus (DC.), 1.19 > Pimenta dioica (L.), 1.24 > Psidium guajava (L.), 1.32 > B. sapida, 1.46 > Lantana urticifolia (Mill.), 1.63 > Terminali catappa (L.), 1.89 > Annona muricata (L.), 15.24 > Capsicum annum (L.), 243.22.

When sprayed directly under Potters' Tower the LD₅₀ values of CE for Hypothenemus hampei (Ferrari) were: Az. indica, 2.5 > B. sapida, 6.65 > E. divaricata, 24.32 > C. annum, 30.90 > A. altilis, 35.32 > Cuscuta americana (L.), 77.97 and for Leucoptera coffeella (Guerin-Moneville) values were 2.63, 14.55 and 23.605 % for A.

indica, B. sapida and A. altilis respectively.

Topical LD₅₀ of four CEs for Plutella xylostella (L.), were: Az. indica, 5.80 > A. altilis, 6.78 > E. divaricata, 7.30 > B. sapida, 8.45. The LD₅₀ values for the parasite, Oomyzus sokolowskii (Kurdjmov), when exposed to films of four CEs of four plants for 24 and 48 hrs. were: Az. indica, 4.32 and 4.97, > A. altilis, 6.39 and 6.78, > B. sapida, 19.54 and 17.65 > E. divaricata, 48.53 and 7.79 respectively.

A. altilis, Az. indica and B. sapida extracts repelled the parasite, O. sokolowskii while E. divaricata extract attracted it.

Mortality (LD₅₀), inhibition of oviposition (IOD₅₀) and inhibition of embryogenesis (IHD₅₀) data (μ g/tick) of twelve CEs for B. microplus respectively were: Az. indica, 1.328, 1.36 and 1.35; T. catappa 3.12, 7.98 and 3.77; A. altilis, 3.30, 3.76 and 2.58; L. involucrata, 4.20, 2.75 and 9.528; Petivaria alliaceae (L.), 4.78, 19.35 and 2.99; Hyptis suaveolens (L.), 4.94, 5.94 and 9.89; L. urticifolia, 5.66, 3.45 and 1.55; B. sapida, 5.94, 1.26 and 0.98; P. guajava, 10.72, 9.57 and 3.78; A. muricata, 11.83, 2.94 and 4.67; Peperomia pellucida, 70.31, 13.12 and 3.60.

CEs of A. altilis, Az. indica, B. sapida and E. divaricata were greatly synergised by piperonyl butoxide (PBO) and mineral oil (MO). Gal-spray surfactant (GSS)

and dimethyl sulphoxide (DMSO) had moderate synergistic effects.

When mixed with p-aminobenzoic acid (PABA) and kept at 6 °C. CE of Az. indica retained activity for up to 18 weeks, followed by those of A. altilis (0.87) and B. sapida (0.57).

In field trials, Az. indica (neem) and A. altilis extracts with or without PBO and Bacillus thuringensis (BT) formulations, sprayed every three or seven days provided excellent control of P. xylostella. CEs of B. sapida and E. divaricata also provided some control for the pest.

Population of B. microplus decreased significantly on cattle treated with CE of Az. indica. Dog ticks and mange were also controlled by the CEs of Az. indica and A. altilis.