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**INSECTICIDAL ACTIVITY OF *EUPHORBIA ANTIQUORUM* L.  
LATEX AGAINST AGRICULTURAL INSECT PESTS**

**A THESIS PRESENTED BY**

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to the Board of Study in Zoological Sciences of the  
**POSTGRADUATE INSTITUTE OF SCIENCE**

*in partial fulfillment of the requirement  
for the award of the degree of*

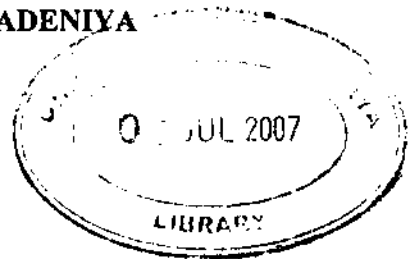
**MASTER OF PHILOSOPHY**

of the

**UNIVERSITY OF PERADENIYA**

**SRI LANKA**

**2006**



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## ABSTRACT

INSECTICIDAL ACTIVITY OF *EUPHORBIA ANTIQUORUM* L. LATEX AGAINST  
AGRICULTURAL INSECT PESTS

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Insecticidal properties of *Euphorbia antiquorum* (Euphorbiaceae) (in Sinhala: Daluke) latex was studied using the plants collected from Eppawala (Anuradapura District), Ibbagala (Kurunagala District) and Haloluwa (Kandy District) during 1999 – 2002. Latex extractions (10%) were prepared in seven solvents *i.e.* dichloromethane, petroleum ether, acetone, methanol, n-hexane, distilled water and xylene.

Insecticidal components were best extracted by less polar solvents like xylene. Out of the four-bioassay methods tested (*i.e.* Potters' sprayer, leaf-dip, hand sprayer and microapplicator), Potters' sprayer method gave the best performance. Xylene-latex extraction was tested against three species of vegetable infesting aphids, three species of rice insect pests, two species of predatory insects and one species of spider. Results revealed that the latex is an effective insecticidal agent but not effective against the insects with a thick cuticle cover. Significant differences of insecticidal activity was observed in the latex collected from dry (highest insecticidal activity), intermediate and wet (lowest activity) zones. Monthly collected latex samples showed that there is no significant seasonal variation of the activity. Field experiments showed that cheap and common detergents like soap could be used to prepare an effective spraying formulation using the crude extraction.

Only the xylene and methanol extractions gave clear spots in thin layer chromatography (TLC). Comparative TLCs showed that the xylene extraction had two additional spots. This extraction was subjected to florisil column chromatography (FCC) and eluted with n-hexane followed by petroleum ether and dichloromethane. Fourth n-hexane fraction had the highest insecticidal activity (53.25% mortality). Only the 4<sup>th</sup> n-hexane fraction gave a clear spot in TLC and a peak at 1.006 min in high performance liquid chromatography (HPLC).

However, these peaks were present in HPLC chromatogram of crude xylene-latex extraction also and may represent the compound/s, which are responsible for the insecticidal activity of the *E. antiquorum* latex. Gas chromatography (GC) showed that the 4<sup>th</sup> n- hexane fraction of FCC comprise of several minor peaks with one major peak at 0.528 min.

On storage, both the xylene-latex extraction and the 4<sup>th</sup> n-hexane fraction of FCC were highly stable showing only a 3% decline of insecticidal activity after one year suggesting that stable commercial products can be formulated from these two.