

**DETERMINATION OF THE INSECT REPELLENT  
ACTIVITY OF HERBS ON *Sitophilus oryzae***

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by

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## ABSTRACT

Natural products from plants are known as secondary metabolites. These compounds show several biological properties including insecticides activity. Storage losses in paddy alone have been estimated to be 4-6% and it had been estimated that 80% of this loss is due to insect attack. Based on, this research mainly focused on to protect the rice from *Sitophilus oryzae* by using herbal plant extraction. In Sri Lanka, only a limited number of studies have assessed the insecticides properties of herbs. Therefore, in this study, insecticides activities of selected three herbs species and their cytotoxicity were tested. Samples were collected from near to university premises. Using methanol extraction, herbs was extracted from three species, *Cinnamomum cassia*, *Plectralthus amboinicus*, and *Aglaia roxburghiana*. plant extract were tested for their insecticidal activities against adults of *Sitophilus oryzae*, using direct contact application. Responses varied with plant material, insect species, and exposure time. Testing was carried out for different concentrations of extracts (153.06  $\mu\text{g}/\text{cm}^2$ , 458.18  $\mu\text{g}/\text{cm}^2$  and 765.30). Insecticidal activity and best plant were discovered for *Sitophilus oryzae*. Methanol extracts of all plants showed insecticidal activity against tested insects. Best plant/s and part/s is leaf of *Cinnamomum cassia*, and least insecticidal activity shows *Plectralthus amboinicus* leaf. Toxicity assay was done to test the toxicity of plants. *Artemia salina* was used for toxicity assay. The results from toxicity assay, a leaf of *Aglaia roxburghiana* is having the high toxic and leaf of *Plectralthus amboinicus* is having the least toxic. The results from this study confirm insecticidal activity in *Aglaia roxburghiana*, *Plectralthus amboinicus* and *Cinnamomum cassia*. Further research is needed to identify the individual compounds responsible for insecticidal activity, which may in turn lead to developing natural insecticides from locally available herbs.

Key words: Insecticidal activity, cytotoxicity and secondary metabolites.