

## PLANT SCIENCE

# Insecticidal activity of *Vitex cymosa* (Lamiaceae) and *Eschweilera pedicellata* (Lecythidaceae) extracts against *Sitophilus zeamais* adults (Curculionidae)

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## Abstract

This study evaluated insecticidal and repellent effects of *Vitex cymosa* and *Eschweilera pedicellata* extracts against *Sitophilus zeamais* adults. Contact on filter paper discs and contaminated grain ingestion assays were performed. The repellent effect was evaluated with the “preferential area” method. The extracts provided good results by ingestion and as repellents, but not by contact. *V. cymosa* branches methanol extract was the best, killing nearly 70% of the individuals at its highest concentration, followed by *V. cymosa* flowers dichloromethane extract and *E. pedicellata* branches aqueous extract. Among these, only *V. cymosa* leaves dichloromethane extract did not reduce the number of individuals in F1. Analyzing the repellent effect, when the variable concentration was taken into account, no extract was dose-dependent, and the intensity of response varied with the time interval. Among the extracts tested, *V. cymosa* branches methanol extract is the most promising one, which negative effect on parental resulted in F1 decrease number and the ingestion way was the most efficient.

**Key words:** Botanical insecticides, Plant extracts, Stored grain pests, Weevil

## Introduction

*Sitophilus zeamais* Motschulsky, 1855 (Coleoptera, Curculionidae) is considered an important stored grains pest in Brazil. This weevil affects production quantitatively and qualitatively, and contaminates grain with excrement and exuviae (Gallo et al., 2002). Even today, its control is based on the successive application of synthetic insecticides (Lazzari and Lazzari, 2009). However, the continued use of these products has created serious problems for the environment and human health (Lara, 1991). In order to reduce such problems, alternative control measures have been

adopted (Viegas Júnior, 2003). Substances with insecticidal properties, metabolized and released by plants and capable to act upon insect targets, are an important resource against insect pests (Lara, 1991; Viegas Júnior, 2003). These substances, known as secondary metabolites, have been studied for their insecticidal potential, mainly because of the advantages to the environment and the organisms, and above all because of their proven efficiency against pests (Viegas Júnior, 2003; Zarbin et al., 2009).

Several studies have confirmed plant extracts insecticidal activity against *S. zeamais* adults (Asawalam et al., 2006; Arannilewa and Odeymi, 2007; Liu et al., 2007; Llanos et al., 2008; Akob and Ewete, 2009).

Studies on the insecticidal activity of the two plant species essayed in the present work were not found in the literature available. However, some studies on other species of the genus were conducted by Hebbalkar et al. (1992), Mehlhorn et al. (2005), Rodríguez-López et al. (2007) and

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