Continued Studies of Ventral Eversible Gland Function and Composition in Velvetbean Caterpillars, *Anticarsia gemmatalis* (Lepidoptera: Noctuidae)

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Abstract

- Study function and composition of ventral eversible gland (VEG) in *Anticarsia gemmatalis*
- Perform studies looking at growth until pupation
- Composition studies using GC/MS to analyze volatile components of the gland

Introduction

- Noctuidae family are noted agricultural pests
- Glands in other Lepidoptera are involved in defense, such as in *Schizura concinna*
- VEG previously studied in Fall Army Worm
- Function of the VEG is unknown

General Methods

Pupation Studies

- Larvae reared in incubator in Lab
- Of 30 larvae, 15 were selected for gland removal
- Glands removed, stored in saline
- Larva observed until pupation, weights recorded daily

Composition Studies

- Glands collected, MeCl added for extraction
- GC/MS performed on gland extracts of *A. gemmatalis, H. Zea, and S. frugiperda*
- Peaks compared to library of known compounds

Results

Figure 1: Comparing Weight Gain of Treated vs. Untreated Larvae

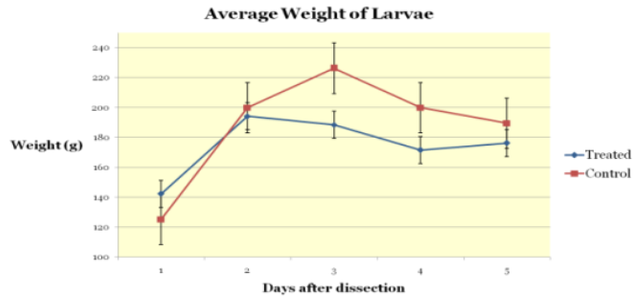

Figure2: Chromatogram – *A. gemmatalis* VEG extracts in MeCl

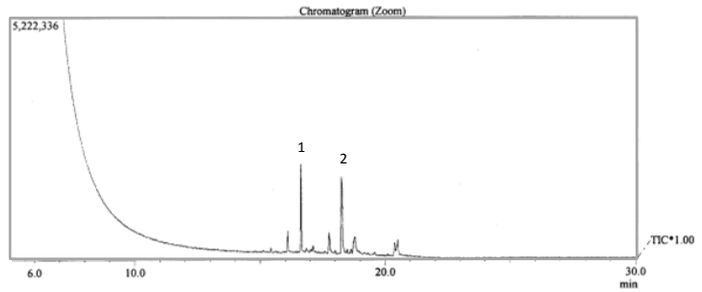

Figure 3: Library Matches for Significant Peaks of *A. gemmatalis*

Peak 1	• Hexadecanoic acid
Peak 2	• 9-octadecenal

Discussion

Pupation Studies

- Function of the VEG remains unknown
- Possible functions include defense, feeding, locomotion, and growth

Composition Studies

- Several possible organic compounds identified
- Similarities and differences among three species
- Hydrocarbons identified in other insects are involved in defense

Future Studies

- Study impact of gland removal on naturally fed larvae
- Study impact of gland removal on younger larvae
- Perform more composition studies involving extractions with other chemicals and more glands

References

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