A GENE CODING FOR A PUTATIVE TERPENE SYNTHASE FROM SUGARCANE IS INDUCED DURING *DIATRAEA SACCHARALIS* INFESTATION

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Many plant species emit a blend of volatile compounds upon herbivore attack, especially terpenes. We have demonstrated (E)-caryophyllene emission by sugarcane plants in response to *Diatraea saccharalis* herbivory (shown in a companion poster). In order to find whether the gene expression of a terpene synthase (tps) is concomitantly induced during *D. saccharalis* herbivory, we have aligned gene sequences of tps from different Poaceae species, designed degenerate primers based on conserved regions, and evaluated by real time quantitative RT-PCR (qRT-PCR) the expression of a tps gene in sugarcane plants upon herbivory. Thirty-five-day-old plants were separated into three groups: the real herbivory (RH), in which the plants were infested with three 2nd-instar caterpillars each plant; the simulated herbivory (SH), in which plants were mechanically wounded and treated with caterpillar oral secretion; and the control plants (C), without any treatment. Total RNA was extracted from leaf tissue and converted to cDNA using a high capacity cDNA reverse transcription kit. The amplicon sequence obtained by RT-PCR with the degenerate primers was confirmed by sequencing to pertain to a gene coding for a sugarcane terpene synthase. Analysis by qPCR using sugarcane specific primers showed that the expression of tps gene was three fold higher in plants from RH group in comparison to plants from C group. Furthermore, the higher expression remained over a time course of 48hr. In plants from SH group the expression of tps was also higher than in the plants from C group, but lower than in plants from RH group.

MORPHOLOGY OF ANTENNAL SENSILLA IN TORTRICID MOTHS, *EPIPHYAS POSTVITTANA* AND *PLANOTORTRIX OCTO*

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The morphology of the antennal sensilla in the males and females of *Epiphyas postvittana* (Lepidoptera: Tortricidae) and *Planotortrix octo* (Lepidoptera: Tortricidae) was investigated by scanning electron microscopy. The number and overall length of flagellomeres was greater in females than in males in both species. The flagellomeres of the antennae in these two species contained six morphological types of sensilla: sensilla trichodea, s. basiconica, s. coeloconica, s. auricilica, s. chaetica and s. styloconica, in varying numbers and distribution along the antennae. Among these sensilla, four types (trichodea, basiconica, coeloconica and auricilica) of sensilla demonstrated multi-porous surface structures, indicating that the primary function of these four types of sensilla is olfactory. The number of each type of sensilla was similar between males and females in *E. postvittana*. In contrast, *P. octo* showed sexual dimorphism in the number of olfactory sensilla. Sensilla chaetica and s. styloconica distributed evenly along the antenna. All four types of olfactory sensilla could be further classified into subtypes according to their size, shape and surface structure. Our observation indicates that the morphology and distribution of antennal sensilla is species-specific and sex-specific. Since the male antennae of these moths contain all four types of olfactory sensilla in similar numbers to those of females and male-specific population of s. trichodea is usually responsible for female sex pheromone detection in moths, it is suggested that the males, as well as females, have well developed olfactory sensory system for detecting host-related volatile compounds.