Área: PN
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Herbivory alters the volatile profile of *Piper lindbergii* (Piperaceae) and increases the emission of compounds recognized by a specialist herbivore

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Palavras Chave: *Volatile Organic Compounds; GC-EAD; herbivore-induced plant volatiles; Lepidoptera; host plant selection*

Highlights

Volatile organic compounds (VOCs) are released by *Piper lindbergii* plants after herbivory by larvae of the specialist herbivore *Eois* nr *multistrigaria* (Lepidoptera: Geometridae). Gas chromatography coupled with electroantennographic detection (GC-EAD) assays show that female *E. nr multistrigaria* moths can perceive more of these VOCs than male moths of the same species.

Resumo/Abstract

Plants of the genus *Piper* (Piperaceae) make up a large proportion of the understory of tropical forests, and despite previous studies characterizing the diverse chemistry of many of these plants and studies suggesting that this phytochemical diversity is linked to a higher degree of insect herbivore specialization and parasitoids diversity, little is known of the role of volatile organic compounds (VOCs) in mediating ecological interactions with these higher trophic levels. VOCs can lead to changes in ecological communities by mediating changes in animal distribution, diversity and abundance. Specifically, VOCs can change insect behavior, such as influencing host plant selection through attraction or repellence, or acting as signals of the presence of caterpillars to foraging predators and parasitoids, which in turn control herbivore populations. Therefore, improving our understanding of the effects of natural products produced by plants on their ecological interactions can help to understand mechanisms that structure and maintain biodiversity in natural communities. While there is extensive literature on essential oil characterizations of *Piper* plants, essential oils do not always accurately represent the volatile blends that are released into the air by the plant and their composition is subjected to changes caused by harsh conditions during distillation and residual leaf enzymatic activity. Here we used a static headspace VOC sampling method with polydimethyl-siloxane (PDMS) tubes under field conditions with native plants and herbivores in a fragment of Atlantic Forest at the Reserva Biológica da Serra do Japi in Jundiaí (São Paulo state). We show that the VOC profile of *Piper lindbergii* consists of a blend of mono- and sesquiterpenes and increases in complexity and abundance after herbivory by larvae of the specialist herbivore *Eois* nr *multistrigaria* (Lepidoptera: Geometridae), a previously undescribed species of neotropical moth. Laboratory gas chromatography coupled with electroantennographic detection (GC-EAD) assays show that female *E. nr multistrigaria* moths can perceive more of these VOCs than male moths of the same species, suggesting they may be used as cues for host plant choice for oviposition in this specialist herbivore. Field assays to test the potential role of VOCs as cues for parasitoids were unconclusive and require further studies.

Agradecimentos/Acknowledgments

The authors acknowledge funding from FAPESP (2014/50316-7, 2015/26823-9) and CNPq (166551/2020-1) Dr. Simeão M. Moraes for molecular and morphological identification of *Eois* specimens, and Dr Lydia F. Yamaguchi, Dr Variluska Fragoso, Welber S. Neves and Joaquim L. Matheus for assistance in the field.