TOMATO LEAF VOLATILES INDUCED BY EGG DEPOSITION OF TUTA ABSOLUTA

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In response to attack by herbivores, plants produce semiochemicals which act as repellents and/or attractants for herbivores and their natural enemies [1]. Elucidating the chemical ecology of natural enemies, herbivores and host plants is important in the development of effective and successful pest management strategies. The tomato leafminer \textit{Tuta absoluta} (Lepidoptera: Gelechiidae) is a devastating pest of cultivated tomato \textit{Solanum lycopersicum} throughout South and Central America and Europe. Mated females discriminated three cultivars of \textit{S. lycopersicum} according to their volatile profiles [2]. However, the specificity and role of tomato plant volatiles induced during the early phase of attack, especially on egg deposition by \textit{T. absoluta}, and their consequences on insects and their natural enemies remain poorly explored. Studies on egg deposition demonstrated that oviposition affects plant emission affecting egg survival or arresting egg parasitoids, tiny parasitic wasps that kill insect eggs [2]. The main aim of this study is to identify oviposition-induced plant volatiles of tomato leaf by the deposition of eggs from tomato leaf miner, \textit{T. absoluta}.

For this purpose, females of \textit{T. absoluta} were placed in plastic cages containing twenty to thirty day-old tomato plants, to allow egg deposition. Solid Phase MicroExtraction (SPME) sample pre-concentration technique combined with gas chromatography-mass spectrometry and tandem mass spectrometry (GC-MS, GC-MS/MS) was employed for the identification of the emitted volatiles at 24, 36, 48, 72 and 96h after oviposition. Five replicates were performed in each treatment.

\(\beta\)-phellandrene was the predominant compound, comprising approximately 85% of total volatile content followed by 2-\(\delta\)-carene, and \((E)-\beta\)-caryophyllene. The presence or nor of minor compounds found to alter the volatile composition of tomato leaf during the oviposition. This is the first step in order to clarify the role of volatile to the attractor arrest \textit{Trichogramma} egg-parasitoids.

KEYWORDS: Tomato leaves volatiles, Oviposition attractants, \textit{Tuta absoluta}

REFERENCES: