

Unravelling chemical cues used by *Diachasmimorpha longicaudata* (Hymenoptera: Braconidae) during host search

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INTRODUCTION

Parasitoid wasps are attracted to their hosts using associated volatile compounds.

In an static-air olfactometer, it was shown that *Diachasmimorpha longicaudata* females oriented towards oranges with direct or indirect signs of infestation with host larvae,

The identification of attractive volatile compounds will allow the development of effective baits for population monitoring in IPM programs.

Aim: To confirm previous results using a dynamic olfactometer and to identify relevant volatile compounds related to wasp attraction.



MATERIALS AND METHODS

Behavioral tests

Naïve females had to choose between a treated and a control orange (*Citrus sinensis* var. Navel) in a Y-tube olfactometer. Choice preference was assessed by means of a G-test of goodness of fit.

Chemical analyses

Collection of volatiles was performed through dynamic head-space sampling for 4 h using HayeSep-Q traps. Samples were used in GC-EAD experiments and antennally active compounds shared by all but the control oranges were identified using the NIST library and Kovats index. A dose-response analysis was performed with synthetic compounds.

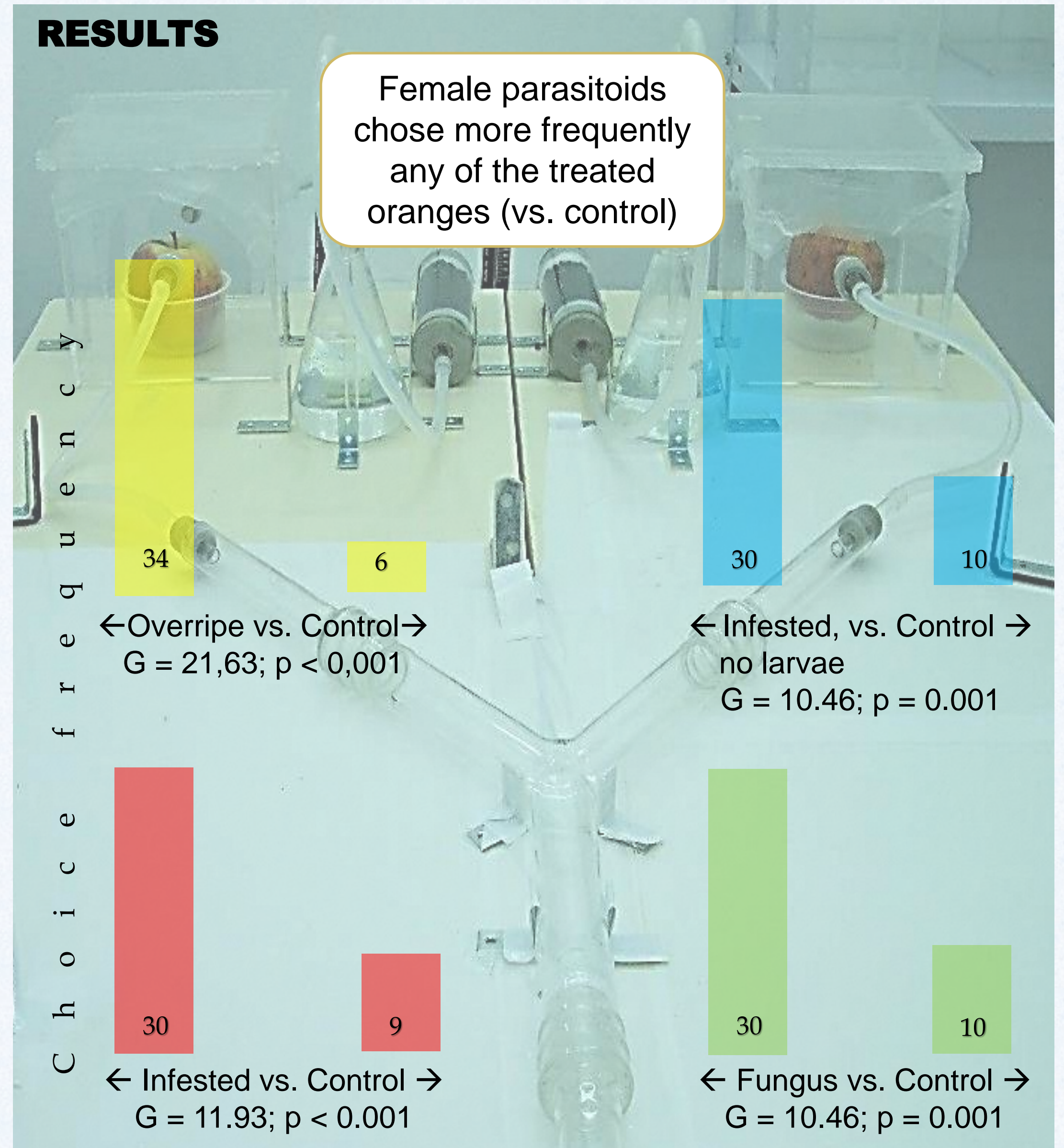
Treatments: 1. Oranges infested with 3rd instar *Ceratitis capitata* larvae; 2. infested oranges from which larvae already escaped to pupate; 3. non-infested, overripe oranges; 4. non-infested oranges with *Penicillium digitatum* grown on the surface, 5. non-infested, healthy ripe oranges (control).



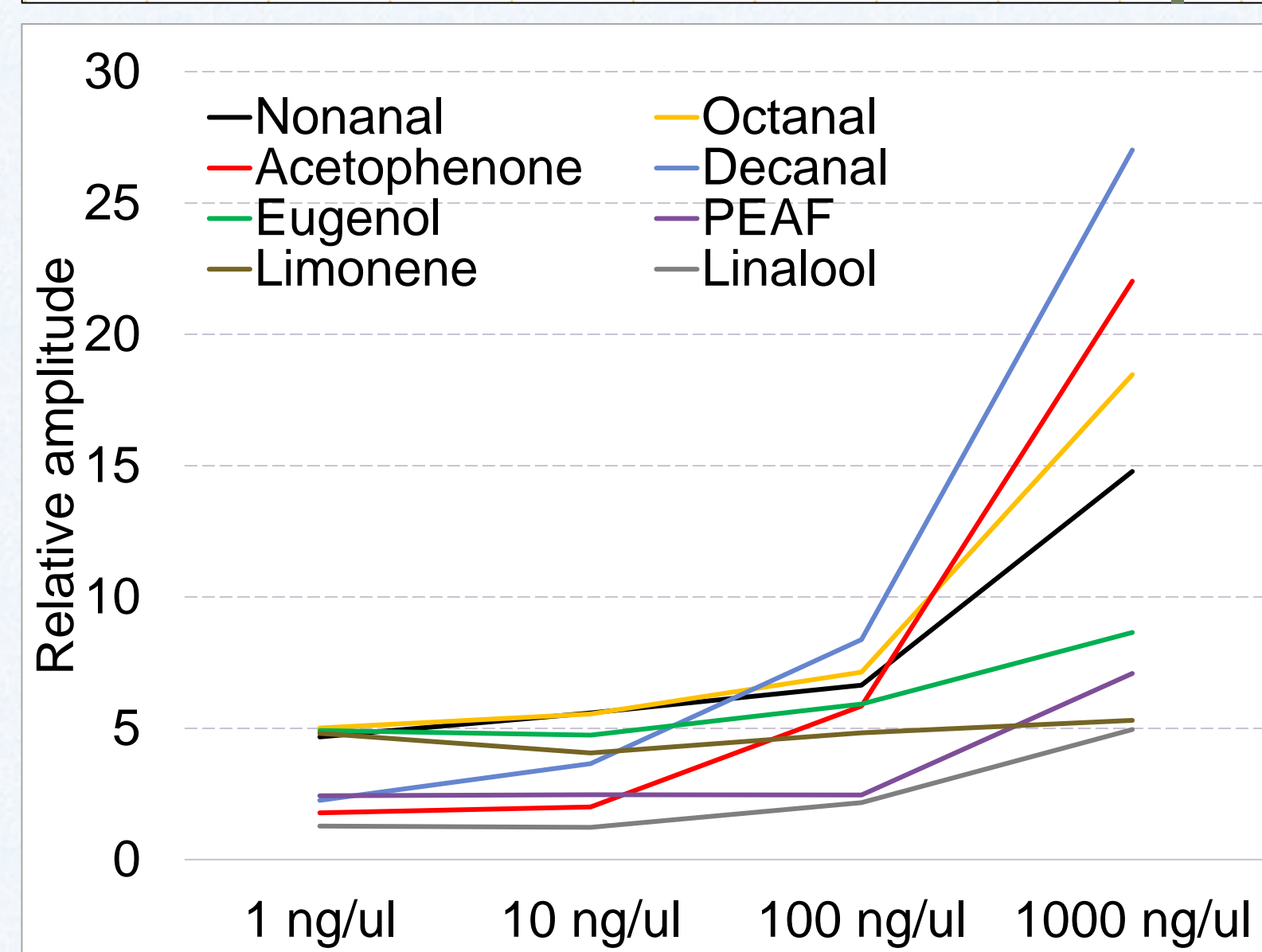
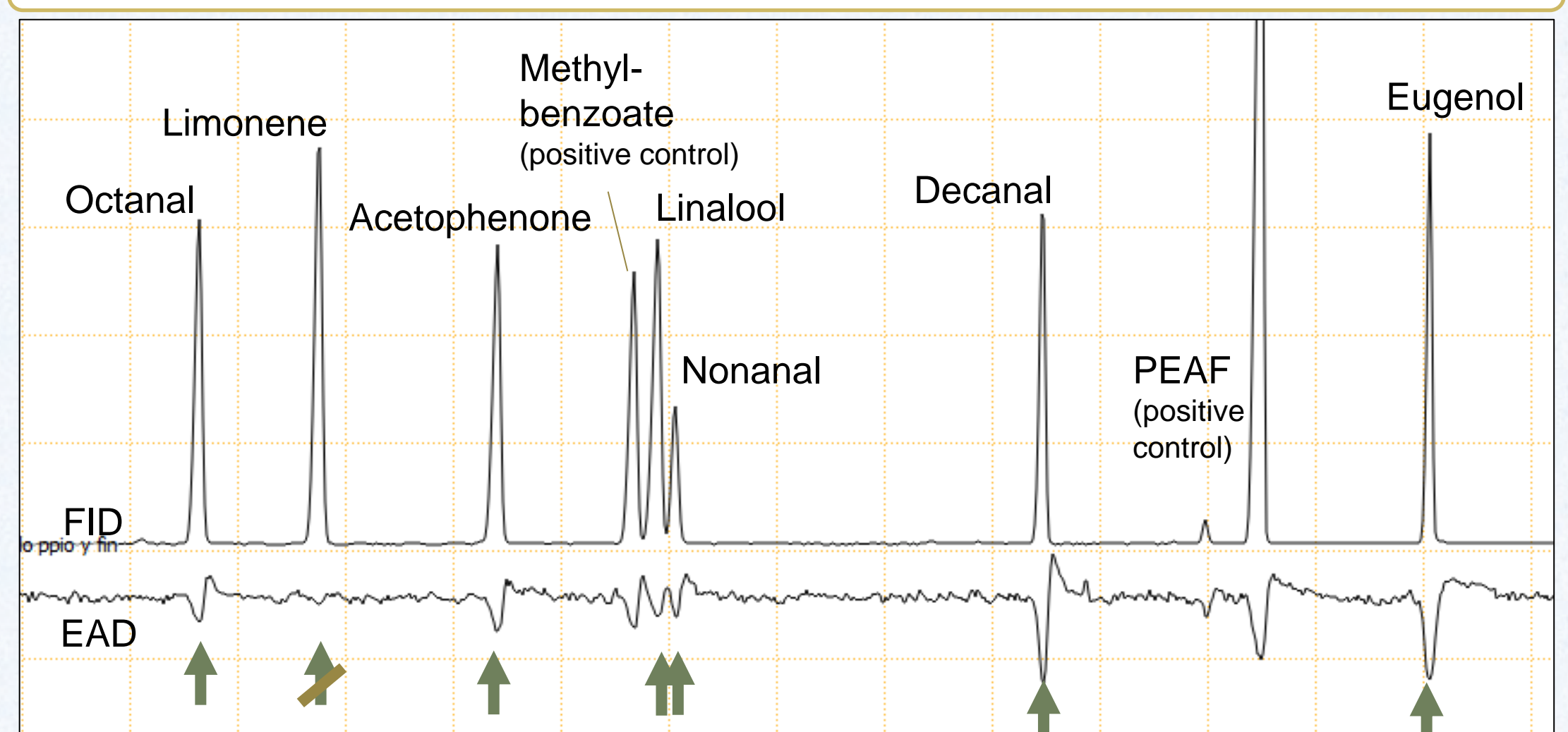
CONCLUSIONS

Anemotaxis of *D. longicaudata* females towards oranges with signs of larval presence was confirmed. Seven compounds were identified based on their presence in treated but not control oranges and on positive responses on female antennae. Dose-response curves suggest that some compounds might be more relevant than others. Further bioassays (wind tunnel, field cages) are needed to confirm the attractive nature of the candidate compounds.

RESULTS



Identification of antennally active compounds (GC-EAD and GC-MS)



EAD responses showed more sensitiveness towards nonanal, acetophenone, octanal and decanal than to limonene, linalool and eugenol.