

Electroantennogram responses of the cereal aphid *Sitobion avenae* to plant volatile components

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The reception of plant odours in the cereal aphid *Sitobion avenae* (F.), was studied by making use of the electroantennogram technique (see for methods Visser, 1979). An electroantennogram response (EAG) represents the summed receptor potentials of the olfactory receptor cells in the antenna in response to stimulation by

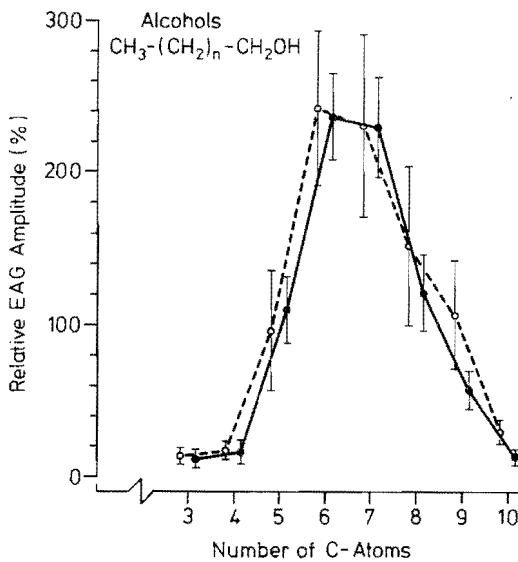


Fig. 1. Effectiveness of saturated alcohols in eliciting EAG responses of *Sitobion avenae*. Mean EAG responses as a percentage of the response to *cis*-3-hexen-1-ol. Broken lines: apterous virginoparae (n:10); solid lines: alate virginoparae (n:11). All compounds were diluted in paraffin oil at 10 $\mu\text{l}/\text{ml}$. Vertical lines indicate 95% confidence intervals.

volatile components. This bioassay gives an indication of the selectivity and sensitivity of the olfactory sense system. In this way particular plant volatile components can be identified as potential kairomones, which at being perceived by an insect might act as chemical cues in host plant selection.

The antennal receptor system of *Sitobion avenae* shows (a) a high efficiency for alcohols containing 6-7 carbon atoms (Figure 1), (b) a high sensitivity for the general green leaf volatiles, trans-2-hexenal and hexanal being the most effective volatiles, and (c) sensitivity for other components as well, like benzaldehyde. The highest EAGs were recorded in alate virginoparae, followed by apterous virginoparae and oviparae respectively. Relative responses do not differ significantly between alate and apterous virginoparae. Whereas oviparae differ from virginoparae in showing higher relative responses to the isomer cis-2-hexen-1-ol, geraniol and farnesyl acetate. These differences might reflect, however, variations between clones of *Sitobion avenae*.

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References

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