Physical and chemical cues regulating the oviposition behaviour of *Aphidius ervi* (Hymenoptera, Braconidae)

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The oviposition attack behaviour of the aphid parasitoid *Aphidius ervi* Haliday is regulated by both chemical and physical cues. The host aphid *Acyrthosiphon pisum* (Harris) sealed into the tip of a glass capillary tube elicited oviposition attack responses from naive female parasitoids, demonstrating the role of visual cues. Colour seems to be an important cue because responses were elicited by other green aphids sealed into glass capillaries but not by the brown form of the natural host *Sitobion avenae* (F.). This was confirmed by placing paint pigments into the glass capillary tips. The parasitoids responded to yellow pigments, one of which elicited repeated oviposition attack responses from all females tested, but they did not respond to green pigments. The spectrum of reflected light from the yellow pigments was very similar to that from green *Ac. pisum*, with a high proportion of the total energy in the yellow-orange waveband. Aphid cornicle secretion also elicited oviposition attack responses, which were not caused by its pale yellow-green colour because the level of response was unaffected under red light conditions. The response to yellow pigments disappeared under red light. Responses to cornicle secretion declined with time after its collection from the aphids, but olfactometer tests showed that this was not due to a loss of bioactive volatiles but that the kairomone involved is a very short range or contact cue. Host exuviae appear to provide a much more stable source of the oviposition kairomone as they retain their activity for many days. This work confirms the existence of an aphid cuticular kairomone, as suggested by previous studies, and attempts are now being made to isolate the relevant chemical compound(s) from aphid exuviae.