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THE EFFECT OF EXPERIENCE WITH HOSTS AND HOST BY-PRODUCTS ON THE RESPONSE TO HOST RELATED ODOURS BY THE LARVAL PARASITOID *COTESIA MARGINIVENTRIS* (CRESSON).

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Parasitoid females faced with the problem of finding suitable hosts for their progeny, rely on certain environmental cues during the host location process. In many instances the females use host related semiochemicals. The response to certain semiochemicals is flexible and often modified by experience (e.g. Arthur, 1971 ; Vinson *et al.*, 1977 ; Vet, 1983, 1985 ; Vet & Van Opzeeland, 1984, 1985 ; Wardle & Borden, 1985). Females of the generalist larval parasitoid *Cotesia marginiventris* (Cresson) also seem to depend on experiences with hosts in their habitat. After experiencing an oviposition on a host larva feeding on leaves, the females show a dramatic increase in response to the odours emitted by the plant-host complex with which they had experience. This increase in response might be due to a change in search motivation triggered by the experience, in which case the responsiveness to alternative plant-host complexes should increase as well. Alternatively, the increase in response might be a result of learning to respond to the odours encountered at the oviposition site. In the latter case the parasitoid's response should only increase to the semiochemicals emitted by the plant-host complex they experienced.

Experiments conducted in a four-arm olfactometer (Vet *et al.*, 1983) showed that females with different types of experiences responded best to the odours of the plant-host complex they had experienced. The experience effect did not require actual encounters with the hosts, contacting leaves damaged and contaminated by host larvae was sufficient to evoke the increase in response. The results suggest that the experience effect involves associative learning. We suspect that contacting larval products causes the females to link the surrounding odours with the possible presence of hosts. Subsequently, the females will use these odours as cues in their search for more hosts.

Experienced females did show some increase in response to odours of an alternative plant-host complex as well. This suggests that learning is not the only process involved, but that the experience also causes a general increase in search motivation. However, semiochemicals emitted by one plant-host complex might be the same or similar to those emitted by the other complex. Therefore, the increase in response could still be the result of learning only.

The mechanism of learning by experience by adult females will be very important for the host searching behavior of generalists like *C. marginiventris*, but it will not be the only mechanism that determines the responsiveness to certain semiochemicals. Part of the response will be purely genetically determined. Also, experience during development in the host and during or right after emergence from the host might modify a parasitoid's sensitivity to certain chemicals. It is likely that a combination of mechanisms regulates a female's response to semiochemicals.

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