

RESEARCH NOTES

Response of *Eriborus trochanteratus* (Morley) (Ichneumonidae : Hymenoptera) to Host Seeking Stimulants

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Chemicals appear to play a major role at every level of host selection process by insects. Kairomones are interspecific chemical messengers, the adaptive benefit of which falls on the recipient rather than emitter (Brown *et al.*, 1970). According to Vinson (1976), the chemicals that are involved in host-parasite relationship viz., host location and host selection process have been referred to as kairomones, which are derived from the host. Many species of parasitoids have been shown to respond to kairomones.

The black headed caterpillar, *Opisina arenosella* Walker is a very serious pest of coconut which scrapes the green tissues of leaf and larvae live under galleries of webbing. An ichneumonid endolarval parasitoid, *Eriborus trochanteratus* (Morley) is one among the many natural enemies of this pest. The present investigation was carried out to identify host-seeking stimulant (kairomones), if any, present in frass larval webbing, regurgitated fluid and haemolymph of *O.arenosella*.

Fresh and dried frass materials of *O.arenosella* larvae during feeding and pupation, silken webbing without frass obtained by allowing the larvae to crawl over muslin cloth for 1-2 h, the regurgitated fluid from mouth and the haemolymph collected by cutting the proleg of larvae were tested in 10 replications.

Test materials from host larvae were kept individually in the centre of a filter paper disc (Whatmann No.1) placed in 9.5 cm dia Petri dish. One freshly emerged adult female parasitoid, which was not exposed to any host previously, was let into each Petri dish and

observed for five minutes. The response of the parasitoid in terms of probing behaviour with ovipositor along with antennal palpation was scored by using the following score rating (Vinson *et al.*, 1975):

Rating Scale	Behaviour
0	No response, not nearing the spot
1	Just antennal contact over the spot and flying away
2	Intensive antennal palpation by moving over the spot along with probing by ovipositor for less than 10 seconds
3	Same behaviour for 10 seconds or more

The observation showed that fresh or dried frass recorded the highest score of 2.3 to 2.4 and elicited a positive response for the parasitoid in the host location process (Table 1) whereas, silken webbing, regurgitated stomach fluid and haemolymph with a scoring of 0.1, 0.2 and 0.5 respectively, have not elicited any positive response.

The results thus clearly indicated that the larval frass materials during feeding and pupation elicited a positive response for *E.trochanteratus* in host location probably due to the presence of host-seeking stimulant (s) in the frass material. The presence of host-seeking stimulants for the parasitoids in frass material from other host insects has been identified by earlier workers. Frass from corn ear worm, *Heliothis zea* (Boddie) was found to contain host seeking stimulants, 13-methyl hexatriacontane which triggered short range host-seeking by the parasite, *Microplites* Cress

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Table 1. Behavioural response of *E. trochanteratus* to extraneous host substances and haemolymph

Treatment	Mean rating*
Fresh frass of larvae	2.4 ^a
Dried frass of larvae	2.3 ^a
Dried frass during pupation	2.3 ^a
Dried frass after pupation	2.3 ^a
Silken webbing alone	0.1 ^b
Regurgitated stomach fluid	0.2 ^b
Haemolymph	0.5 ^b

Means followed by similar letters are not different statistically ($P=0.05$) by DMRT (Gomez and Gomez, 1976)

(Jones *et al.*, 1971). Heptanoic acid was identified as a host-seeking stimulant in frass and found secreted by mandibular glands by potato tuber moth (Vinson, 1976).

Isolation, identification and synthesis of kairomones of the corn ear worm and tobacco bud worm have been reported (Jones *et al.*, 1971; Lewis *et al.*, 1971, 1972; Vinson *et al.*, 1975). The effect of these compounds in eliciting host-seeking responses in ichneumonid parasitoids was also studied by various workers (Vinson and Lewis, 1965; Vinson, 1968; Arthur *et al.*, 1969; Hegdeker and Arthur, 1973; Wilson *et al.*, 1974).

The present investigation which confirmed the presence of certain chemicals in larval frass material acting as host seeking stimulant for the parasitoid, needs to be further explored by isolation, purification and identification of the materials from the coconut frass material in the affected leaflets. This may lead to manipulation of environment by using kairomones for successful biological control programme of coconut leaf caterpillar.

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KEY WORDS : *Opisina arenosella*, *Eriborus trochanteratus*, host location, kairomones, larval frass

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