Dettopsomyia nigrovittata (Malloch), 1924: 352 (*Drosophila*), widespread in tropics and subtropics; W. USA.

Syn. *argentifrons* Okada, 1956: 55.

Specimens examined: 2 males, 2 females: India: Uttar Pradesh, Nainital district, Nainital Cantt, 26.IV.1997.

Distribution: Widespread in tropics and subtropics, W. USA, India (New locality).

Remarks: The genus and species have been reported for the first time from India.

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Genetic manipulation of principal cuticular hydrocarbons in live *Drosophila melanogaster* flies.

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The principal hydrocarbons found on the cuticle of *Drosophila melanogaster* flies may play important roles in intra- and interspecific mate recognition and stimulation during precopulatory behavior (Savarit *et al.*, 1999). Female predominantly produce hydrocarbons with two double bonds and 27 carbons (7,11 heptacosadiene = 7,11HD), and with 29 carbons (7,11 nonacosadiene = 7,11ND), whereas males predominantly produce hydrocarbons with a single double bond on carbon 7 and with a chain length of 23 carbons (7-tricosene = 7-T) or of 25 carbons (7-pentacosene = 7-P) (Antony and Jallon, 1982).

The manipulation of principal hydrocarbons on the cuticle of live flies has been made possible by use of the feminizing transgene UAS-transformer (UAS-tra), either in specific tissues, or during a given developmental time period (Ferveur *et al.*, 1997). Flies used in the latter procedure were simultaneously carrying the UAS-tra transgene together with the heat-shock inducible hsp70-Gal4 transgene. F1 [hsp70-Gal4 x UAS-tra =] hs-tra individuals were simply transferred at 37°C during a unique period of time, and their hydrocarbons were analyzed when they were 4-day-old adults. This manipulation allows one to investigate the role of these different substances with live flies instead of using dummies covered with synthesized or extracted hydrocarbons.

We found that subtle changes of four experimental parameters can induce very significant effects on the production of principal hydrocarbons; These parameters are: (1) the period of time at which the heat-shock is applied. (2) the type of incubator used (air-dry or wather bath). (3) the duration of the heat-shock (one or two hours). (4) the type of vials containing the flies (glass or plastic, with or without food).

Table 1. Principal hydrocarbons of hs-*tra* males after various heat-shock treatments. Data shown are the mean (±se) of the principal hydrocarbons given in nanograms. 7-T = 7-tricosene; 7-P = 7- pentacosene; 7,11 HD = 7,11 heptacosadiene; 7,11 ND = 7,11 nonacosadiene. The sum of all detected hydrocarbons (sum Hcs) is also provided.

Hydrocarbons	7-T	7-P	7,11 HD	7, 11 ND	Sum Hcs
treatment 0	303 ± 30	322 ± 19	34 ± 3	0	1211 ± 74
treatment 1	250 ± 33	380 ± 35	195 ± 39	45 ± 11	1753 ± 84
treatment 2	70 ± 14	204 ± 36	179 ± 36	52 ± 8	1335 ± 146
treatment 3	26 ± 3	100 ± 10	117 ± 38	60 ± 12	990 ± 142
treatment 4	9 ± 2	50 ± 6	28 ± 4	8 ± 3	509 ± 85

treatment 0: no heat-shock; treatment 1: dry incubator, glass vial (18cc) with food (4cc); treatment 2: dry incubator, plastic vial (11cc) without food; treatment 3: water-bath incubator, plastic vial (11cc) without food; treatment 4: water-bath incubator, plastic vial (11cc) with food (4cc).

Table 2. Principal hydrocarbons of hs-*tra* females after various heat-shock treatments. Data shown are the mean (± se) of the principal hydrocarbons given in nanograms. For abbreviations and treatments, see Table 1.

Hydrocarbons	7-T	7-P	7,11 HD	7, 11 ND	Sum Hcs
treatment 0	30 ± 3	82 ± 4	455 ± 18	268 ± 15	1787 ± 46
treatment 1	39 ± 2	123 ± 6	597 ± 31	376 ± 20	2587 ± 93
treatment 2	29 ± 5	114 ± 23	185 ± 38	89 ± 21	1194 ± 224
treatment 3	0	7 ± 2	4 ± 2	2 ± 1	276 ± 25
treatment 4	0	0	0	0	185 ± 15

Two different treatments combining these parameters induced very extreme phenotypes with regard to the principal hydrocarbons in 4-day-old hs-tra males:

–When 12 to 48 hour-old hs-tra males were placed in a dry incubator during two hours, their mature hydrocarbons were largely or completely feminized. In this case, males were grouped by 10, in a glass vial (18 cc) containing 4 cc of standard corn food. If the heat-shock was applied before or after that critical period of time, this procedure had no, or very little effect on hydrocarbons.

–When 3 to 9 hour old hs-tra males were placed in a water-bath incubator during one hour, their mature hydrocarbons were nearly or completely absent. Males used in this procedure were grouped by 10 in a 10 x 120 mm polypropylene vial without food. When the same heat-shock procedure was applied either earlier or later during imaginal development, a partial feminization of the principal hydrocarbon could occur, without any decrease of the general level of hydrocarbons.

We found that the second treatment, but not the first one, had a very significant effect on the hydrocarbons borne by 4-day-old female flies. In this case, female lacked all their principal hydrocarbons.

Here, we investigated the production of the four principal hydrocarbons (7-T, 7-P, 7,11HD and 7,11ND) in 4-day-old hs-tra males and females treated with different combinations of the parameters 2 and 4 (type of incubator and type of vial) described above. All the flies where 3-hour-old adult when treated, and the heat-shock lasted one hour.

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Behavioral interactions in the sibling species *D. pavani* and *D. gaucha* in stressing environments.

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