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Drosophila incompta development without flowers.

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Introduction

The *flavopilosa* group of *Drosophila* is widely distributed in the neotropical region. The species from South America exclusively use living flowers of the genus *Cestrum* (Solanaceae) for egg-laying and larval development (Brncic, 1966, 1967; Wheeler *et al.*, 1962, 1980; Hofmann, 1984), and the species from Central America can use flowers of other genera (Pipkin, 1966).

Four different species of the *flavopilosa* group are found in South of Brazil: *D. flavopilosa*, *D. incompta*, *D. cordeiroi* and *D. cestri* (Brncic, 1978). Two of them, *D. incompta* and *D. cestri*, are the most abundant ones and are even found together in the same flower (Napp and Brncic, 1978; Hofmann and Napp, 1984).

The coexistence of the two species in the same plant seems to depend on certain behavioral and ecological differences. *D. cestri* females usually lay only one egg inside the unopened flowers through minute holes made with their strong spined ovipositor in the lower part of corolla. The females of *D. incompta* can lay as many as twelve eggs (in one opened flower). The *Cestrum* flowers grow in bouquets and usually touch each other, so the larvae of *D. incompta* can move from one flower to another (Napp and Brncic, 1978; Brncic, 1983).

The larval nutrition depends on sources provided by the plant. Small larvae seem to use floral sap for their nutrition, while the large ones seem to be pollen feeders. Although nothing is known about the food habits of the adults, it is probable that they also depend on the same plant. (Brncic, 1962, 1966, 1967, 1983; Wheeler *et al.*, 1962). At this moment, there is still nothing described on breeding species of the *flavopilosa* group under laboratory conditions. According to Brncic (1962, 1966, 1983), adults of *D. flavopilosa* are just obtained from *Cestrum* flowers brought into the laboratory, and the addition of the crude extract of these plants to the usual *Drosophila* food-media allow the larval development of this species. Adults of *D. cestri* and *D. incompta* can not be bred in laboratory, and the addition of crude extracts from *Cestrum* plants are ineffective to larval survival in culture medium (Napp and Brncic, 1978).

The *flavopilosa* group deposits eggs in an advanced state of embryonic development (Brncic, 1983). It was observed in the laboratory when, during a dissection of a *D. incompta* female, occurred the expulsion of one egg, and soon a larvae emerged. After this we decided to verify if it would be possible to breed *D. incompta* larvae in food-media without extract of the *Cestrum* flowers or leaves.

Materials and Methods

Adults flies of *D. incompta* were collected in plants of *C. parqui* and *C. calycinum* in Santa Maria city in the State of Rio Grande do Sul, Brazil, during September and October of 2002. It is

common to observe adults of *D. incompta* and *D. cestri* resting and flying over flowers or leaves of genus *Cestrum*, mainly during the morning.

The collected flies were identified, separated by sex in laboratory, and the females of *D. incompta* were dissected for obtaining mature eggs. The collected eggs were placed on pieces of banana media (50 g banana; 1.5 g agar; 0.1 g nipagin; 100 ml water, boiling for 5 minutes). The media was supplemented with baking powder and stored in a humid chamber at 20°C. The pupae were placed in *Drosophila* corn food-media and also maintained at 20°C.

Results and Discussion

Flies collected in nature are bigger than those emerging from *Cestrum* flowers brought to the laboratory, and several had a green coloration at their abdomens. This coloration is probably related to their feeding, since flies lost this green coloration after a few hours in the laboratory. In five collections, 18 eggs were obtained from 39 adult females. Eight eggs reached the pupal stage and four adults emerged.

Larvae presented a great mobility in the banana media. This behaviour is common in *D. incompta* (Brncic, 1983), whose larvae migrate among the flowers searching for food. This mobility is also observed in larvae when flowers are collected. It can explain the low number of pupae obtained from collected eggs. Several larvae died dehydrated when getting out of the banana media.

According to estimations of *D. flavopilosa* (Brncic, 1966), in natural conditions only 10% of the larvae complete the life cycle. In laboratory conditions it is expected that 40–50% of larvae reach the adult stage when developing inside the flowers, whereas in the banana media used in this work 22% of the collected eggs became adult flies.

The period of development observed in *D. incompta* on banana media was 17 days from egg to pupae and four days from pupae to adult. These results are very similar to those described for *D. flavopilosa* developing in flowers (Brncic, 1966, 1967).

These results show that *D. incompta* do not depend exclusively on *Cestrum* flowers for larvae development. It can indicate this species has a less narrow dependence on the host plant than do other species of the group.

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