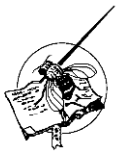

A preliminary report on *Drosophila* fauna of Lahore, Pakistan.

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Despite the fact that luxuriant flora and suitable climatic conditions exist in Pakistan for propagation of *Drosophila* species, little is known about *Drosophila* fauna of Pakistan. A few people have initiated the work in this field in Pakistan.

With a view to surveying *Drosophila* fauna of whole Pakistan, a project was begun during 1990-1992 in the Department of Biological Sciences, Quaid-e-Azam University, Islamabad, under the supervision of Dr. Mahmud Ahmad. As a part of that project, Din and Mazhar conducted a survey of Islamabad (33° 43′N, 73° 04′E) and identified ten *Drosophila* species. Another attempt was made by Shahjehan and Iqbal in NWFP (34.00°N 71.32°E) and, as a result, nine species had been reported.

Another attempt was made during 1990 to 1991 to explore *Drosophila* fauna of Lahore, Pakistan (31° 32’ 59”N, 74° 20’ 37”E). Baits were tried with different fruits such as banana, apple, guava, plum, muskmelon, orange, and lemon. Of all these fruits, fermenting bananas with a little yeast extract were found to be most effective bait. Net sweeping over bins containing peeling and decaying fruits also proved quite useful to collect large numbers of flies. It was found that drosophila flies were most abundant during April, September, and October. Cultures were made by using single female trapped from the wild, and their progeny was used to identify species. As a result ten species were identified on the basis of morphological criteria, which are as follows: *D. busckii, D. setaria, D. immigrans, D. melanogaster, D. takahashii, D. nepalensis, D. malerkotliana, D. ananassae, D. jambulina*, and *D. brevis.* The first three of these belong to subgenera *Dorsilopha*, *Pholadoris*, and *Drosophila*, respectively, and each of the remaining seven belongs to *melanogaster* species group of subgenus *Sophophora*. In order to verify identification further, seven species were studied for their reproductive isolation and mitotic as well as salivary gland chromosome complements. The chromosome number and morphology of each of these species were found to be in full conformity with already published literature on chromosomes of these species.

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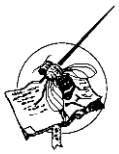

Sucrose improves sexual performance in the male fruit fly.

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We are interested in the regulation of sexual behavior in *Drosophila* (Terhzaz *et al*., 2007) and would like the males we use in our experiments to be in good physiological shape. From the extensive work by Dethier (1976), we know that male blow flies feed essentially on sugar water and

unlike females do not take extensive protein meals. It seems plausible that the same is the case for male fruit flies. As our standard fly food is made up of corn meal and yeast extract without any added sugars we wondered whether giving males access to sucrose water might enhance their sexual prowess. We tested this by keeping Canton males after emergence in tubes containing either our standard food, or in addition a small reservoir (Sellami *et al*., 2010) filled with 2 Molar sucrose and 1% E133 Brilliant Blue FCF. Both the fecal materials and the crop content turn blue, thus confirming that the flies have taken sucrose. Sexual performance was then tested by exposing a 4- to 7 day old virgin with two males of the same age, one of which had, and one which had not, been given access to sucrose. Courtship was followed for twenty minutes and the outcomes scored as to which male succeeded in copulating with the female and how long it took for it to achieve copulation. The sucrose-fed male was easily recognized by the brilliant blue in its crop.

Table 1. Outcome of sexual competition for a single virgin between two males of the same age, one which has had access to sucrose and one that did not. n, number of males that copulated with the female and either had (+) or had not (-) access to sucrose; none, refers to the number of assays in which neither male achieved copulation within 20 minutes. Number refers to the total number of tests performed and % to the percentage of tests in which the female copulated with either male within 20 minutes. P, statistical significance between the copulation success rates of the two types of flies (Wilcoxon sign test, one-sided). Time refers to the time from start to copulation, values are means ± SEM. There are no significant differences (NS) in the success rates for the different males at ages of 1 and 5 days, but the difference at 3 days is statistically significant, while the differences at 2 and 4 days are not statistically significant but might have become had more tests been performed (in both cases 0.12 > P > 0.10).

	Age of male Flies									
sucrose	1 day		2 days		3 days		4 days		5 days	
	n	time	n	time	n	time	n	time	n	time
+	8	6'03" ± 1'57"	42	7'02" ± 0'47"	45	5'33" ± 0'50"	32	4'23" ± 0'45"	18	4'08" ± 0'36"
-	12	9'31 ± 1'27"	32	7'57" ± 1'13"	23	3'26" ± 0'23"	22	3'24" ± 0'22"	16	3'40" ± 0'48"
none	20	-	31	-	5	-	9	-	0	-
number	40		105		73		65		34	
%	50		70.5		93.5		86.2		100	
P	NS		NS		P < 0.01		NS		NS	

If one lumps the data (Table 1) of all five age groups together, the results are statistically significant ($P < 0.01$), but if one looks at the different ages, it is clear that the difference is most pronounced for 3-day old males, with a tendency for 2- and 4-day old flies. Energy stores after the adult moult can be expected to be low, and a likely explanation of the results is that sucrose provides an easily metabolized energy source, which allows the recently-emerged males to compete more efficiently than the males which did not have access to sucrose. As has been shown for flight in *Drosophila*, sucrose and other sugars can immediately restore low energy stores (Wigglesworth, 1949). Higher energy levels are also suggested by the shorter time needed for 1 day-old flies to achieve copulation when they have access to sugar (Table 1). Presumably with time flies that do not have access to sucrose accumulate sufficient glycogen from the digestion of the starch in the standard food to allow efficient competition with males having access to sucrose. In conclusion, sugar consumption at an early age significantly enhances sexual performance of young male flies, and it may be useful to supply sucrose water to male flies if one intends to use them for courtship behavior.

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