



Fig. 2: Loops in the spermatocyte nucleus of normal (a), tube-proximal (b) and tube-distal, (c) male. Explanations: ddF, diffuse distal (normal), dsF, tubular distal sections (tube-distal) of the threads; pkF, proximal compact (normal), psF, proximal tubular sections (tube-proximal) of the threads; N, nucleolus. For other abbreviations, see fig. 1.

Pelecanos, M. University, Thessaloniki, Greece. The mutagenic effect of the duration of treatment with diethyl sulphate on previously starved adult males.

Previous communications have shown the importance of diethyl sulphate as a mutagenic agent. (Pelecanos 1962, Pelecanos and Alderson, 1963). Moreover, the mutagenic activity of above mentioned chemical has been studied in detail by the same workers and the data obtained are already in press.

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The present report describes the results of some preliminary experiments the aim of which was twofold:

1. Study the effect of the duration of treatment upon the yield of mutations induced by the feeding of diethyl sulphate.
2. Assess whether a prior starvation treatment of the adult males would alter the frequency of induced mutations.

In all our previous experiments, newly emerged Oregon-K males were treated immediately after collection, while in the present two series of experiments, they have been either fed for 24 hours in an ordinary medium, or starved for 24 hours before the treatment. The same diethyl sulphate solution has been used throughout each experiment despite the different rate of hydrolysis over the different periods of treatment. The method used for feeding the flies has been described elsewhere (Pelecanos and Alderson 1963). After the treatment the males were tested for sex-linked recessive lethal mutations by the Muller-5 method. Each male was individually mated to two females for three days; only the first brood is recorded here.

The results are gathered in Tables I and II.

Table I shows that when a 24 hour starvation preceded the treatment, there was essentially a linear relation between the duration of treatment and the mutagenic effect. On the contrary, when newly emerged males have been fed for 24 hours in an ordinary laboratory food medium

before treatment, the data obtained (Table II) are entirely different. There is no sign of linearity as regards the relation between the treatment's duration and the yield of mutations induced; furthermore, the frequency of mutations itself is significantly lower in all three cases where data so far available, allow comparisons. (For 12 hr, 24 hr, and 36 hr. treatments, the χ^2 values and the probabilities are respectively: $\chi^2_1=4.25$ $P<0.05$, $\chi^2_2=6.6$ $P=0.01$, $\chi^2_3=12.9$ $P<0.001$).

Table I. The mutagenic response to adult feeding of diethyl sulphate, when newly emerged males have been starved for 24 hours before treatment.

	Duration of Treatment	No. of chromosomes tested	No. of lethals	lethals per cent
Concentration of D.E.S. 0.5%	12 hours	1,079	68	6.30
	24 hours	743	84	11.30
	36 hours	567	117	20.63
	48 hours	1,040	282	27.10

Table II. The mutagenic response to adult feeding of diethyl sulphate, when newly emerged males have been fed in an ordinary medium for 24 hours before treatment.

	Duration of Treatment	No. of chromosomes tested	No. of lethals	lethals per cent
Concentration of D.E.S. 0.5%	12 hours	786	17	2.16
	24 hours	1,141	33	2.89
	36 hours	987	85	8.61

Note: D.E.S. stands for diethyl sulphate (ethyl sulphate).

The most likely explanation appears to be that when previously fed, the flies do not eat enough from the treatment medium which obviously they dislike. It is also reasonable to assume that flies resist better to hunger when the treatment's duration is shorter; our results are clearly in favor of such an explanation. Thus, a previous to the treatment starvation appears to be an important factor which has to be considered when using diethyl sulphate as a mutagen by the adult feeding method.

References: Pelecanos, M. Induced oögonial lethals. DIS 36:107, 1962.

Pelecanos, M. and T. Alderson. The mutagenic response to adult feeding of diethyl sulphate in *Drosophila*. DIS 37:116, 1963.

Narda, R. D. Panjab University, India. The role of various male stimuli during mating and insemination in *D. malerkotliana* Parshad and Pika, 1964.

The direct observations on the courtship behavior of males in *Drosophila malerkotliana* reveal that the male approaches the female, taps the tarsi of her middle-leg with that of his fore-leg, vibrates his wings, circles in the case of non-receptive female and postures

at her rear end. To study the extent of the role played by each act in preparing the female for coition, as well as to find out the effect of light, experiments were designed eliminating the various factors one by one. Ten four-day old virgin females and 10 males of the same age but either without fore-leg tarsi or wings were kept for 48 hours in a half-pint milk bottle with standard *Drosophila* food at $25 \pm 1^\circ\text{C}$ in a room with fluorescent tube lighting. The light was eliminated by running the experiment in closed cardboard boxes which were early checked for the purpose. Ten trials for each set of experiment along with a control were run simultaneously. After the required period the females were checked for insemination through the presence of sperms in their spermathecae and ventral receptacles. Whereas the normal males inseminated 42% females in light, only 7.293% were fecundated in total darkness. Further, since the percentage insemination again increased to 39.796 when 1/4 pint milk bottles were used the possibility of vision as a major stimulant is ruled out. It rather helps in bringing the mates together. The removal of fore-leg tarsi in males decreased the insemination to