in good agreement with the calculated values of the Petit and Ehrman indices and even of the Merrel coefficients; but the comparison of the regression lines seems more interesting, in enabling us to make obvious the part played by the vigor factors.

References: Elens, A. 1958, Experientia 15:274; Elens, A. and J.M. Wattiaux 1964, DIS 39:118; Faugères, A., C. Petit and E. Thibout 1971, Evolution 25:265; Merrel, D.J. 1950, Evolution 4:326; Petit, C. and L. Ehrman 1968, Bull. Biol. 102:433; Wattiaux, J.M. 1964, Z. Vererbungsl. 95:10; Wattiaux, J.M. and A. Elens 1964, DIS 30:118.

Mahajani, S. and V.L. Chopra, Indian Agricultural Research Institute, New Delhi, India. Nitrosoguanidine mutagenesis in Drosophila melanogaster.

Nitrosoguanidine (NG) is extensively used as a mutagen in a wide variety of organisms. In Drosophila melanogaster, NG has been shown to be effective in inducing mutations in mature sperm (Khan, 1968 DIS 43:162) by feeding adult males with solution of NG in glucose, and in all stages of spermatogenesis (Browning, 1969 Mutat. Res. 8:157) following injection of saturated solution of NG into adult males. We have been studying NG mutagenesis in D. melanogaster with a view to reinvestigating the finding that the time of action of NG, at least in part, corresponds to the time of meiotic DNA synthesis in the testis. The results of some of our experiments are briefly outlined below.

Both the adult feeding method (0.05% NG in 5% glucose) and injection of NG (0.01%, in distilled water) were used. Treated males were mated to a succession of Muller-5 virgins so as to determine the mutagenic effectiveness of NG for different germ cell stages. Mature sperm were found to give the highest response to the mutagenic action of NG (SLRL frequency in the first brood was 9.1% and 6.5% for feeding and injection methods respectively). Further the two methods were found to give very similar results at concentrations which produced comparable sterility. However, premiotic germ cell stages of the treated adults remained, largely refractory to NG action. The percentage mutation (SLRL) frequencies in a representative experiment for 6 three-day broods were: 8.98, 5.61, 2.42, 0.48, 0.58 and 1.13. The considerable mutagenic effect observed for the earlier broods thus disappears by the 4th brood onwards (i.e. 10 days after treatment) when our brooding technique will sample treated spermatocytes and spermatogonia.

Treatments to larvae were next undertaken to ensure effective treatment of the premeiotic germ cell stages. Two treatment methods were used: (1) larvae were reared on basal medium containing 0.06% NG and (2) larvae were fed on 0.03% solution of NG in distilled water for 12 hours and then allowed to complete development on basal medium. Smaller, but significant, frequencies of SLRL (3.3% and 3.6% respectively) were induced in 24 hour larvae (egg laying time) by both these methods.

When feeding of 0.05% NG in medium was extended to larvae of different ages and SLRL frequencies were determined in successive broods from emerging males, the results shown in Table 1 were obtained. The following conclusions emerge from the data in Table 1.

Table 1

Age of treated larvae (hours)	% SLRL in broods (3 days, 2♀♀/♂) 1	2	3
24	3.85	3.31	2.67
36	2.73	3.22	1.33
48	2.16	1.76	0.00
60	3.16	0.00	0.00
72	2.05	2.43	0.20
84	1.07	0.00	0.00

(frequencies based on a minimum of about 500 tested chromosomes from 50-60, treated males)

(1) For a particular age of treated larvae, the mutation frequencies decline in successive broods. This is true even for successive batches of treated spermatogonia which will be sampled, for example, in treatments of 24 and 36 hr larvae.

(2) Where analysis of successive broods permits comparison between sensitivities of spermatogonia and spermatocytes (e.g. 48 hr and older), the latter give higher mutation frequencies.

(3) The conclusion in (2) above, however, has to be viewed in the context of age of the treated larvae and the mutation frequencies obtained therefrom. For, as is obvious, the older the treated larvae, the smaller is the mutagenic effect of NG treatment.