Our Drosophila cultures were kept at 25°C. At lower temperatures body weight increases. The described relationship with ADH activity does not hold in this case. ADH activity per mg is then even somewhat reduced with increasing body weight.


Rate of development and viability are the two parameters by which toxicity of a chemical is measured. Such parameters were used to test the effect of Dithane M-45 on D. melanogaster (Oregon-K). Eggs of the same age (±4 hours) were collected following the procedure of Delcour (1969). 35 eggs were then placed into each 3" x 1" vial containing chemical-supplemented media and normal medium and permitted to develop at a constant temperature of 23±1°C. Concentrations of 2, 5, 10, 15, 20, 25 and 30 mg of the chemical were thoroughly mixed in 100 ml wheat cream agar medium. The normal medium was used as control. The flies were scored each day from the time of emergence up to the end of eclosion. The pattern of emergence of flies in the control and in different concentrations of Dithane M-45 is depicted in Fig. 1 (see following page). It is clear from this graph that in the control the emergence of flies started on day 9 with a peak on day 11 and terminated on day 17. In contrast to this, the rate of development is prolonged in different concentrations of the chemical, thus affecting the time of emergence. In the lowest concentration (2 mg/100 ml food medium) eclosion commenced on day 11 and ended on day 22 with a peak on day 14. On the other hand, in the highest concentration (30 mg/100 ml) eclosion began on day 19 and terminated on day 29. Here the peak of emergence was confined to day 25. The effect of Dithane M-45 on viability was measured by the number of flies emerged in each group. Thus the number of flies obtained in the control is 93.57%, while in the lowest concentration it is 82.14%; in the highest, 3.57%. From these results it is clear that Dithane M-45 has a significant toxic effect at higher concentrations.

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Acetyl salicylic acid, marketed under the name "Aspirin", is well known for its antipyretic, analgesic and anti-inflammatory activity. It has been convincingly shown that aspirin produces drastic changes in experimental animals and plants. It is reported by Vasudev et al. (1978) that aspirin has a pronounced effect on the rate of development and viability in D. melanogaster. So far, there are no mutagenic reports of this drug. Hence, the authors tested the mutagenic property of this drug by scoring sex-linked recessive lethals in D. melanogaster. Oregon-K and M-5 of D. melanogaster formed the materials for the present study. Aspirin was fed to D. melanogaster larvae in concentrations of 300 and 350 mg per 100 ml of food
Fig. 1 Pattern of emergence of flies in control and in different concentrations of Dithane M-45

% Emergence

DAYS

0 10 20 30 40 50
medium. The procedure for scoring sex-linked recessive lethals is described in detail by Abrahamson and Lewis (1971). In the present experiments two-day-old treated males were used to test for the induction of sex-linked recessive lethals.

Table 1 incorporates the data on the frequencies of sex-linked recessive lethals in controls as well as in the chemical-treated series. From this it is clear that both the concentrations tested were unable to induce a significant percentage of lethals compared to controls. By this, it can be concluded that these concentrations of aspirin are non-mutagenic to D. melanogaster. Consistent with this non-mutagenic nature of the drug, Maner et al. (1970) have reported that aspirin is unable to induce chromosomal aberrations in human leukocytes. In contrast to these results, Jarvik and Kato (1968a,b) and Loughman (1971) in human leukocytes and Sen et al. (1975) in Allium cepa have shown significant chromosomal aberrations from aspirin and concluded it to be mutagenic. In the light of these highly contradicting results, more investigations on other animals and plants are necessary even though it is non-mutagenic in D. melanogaster.

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