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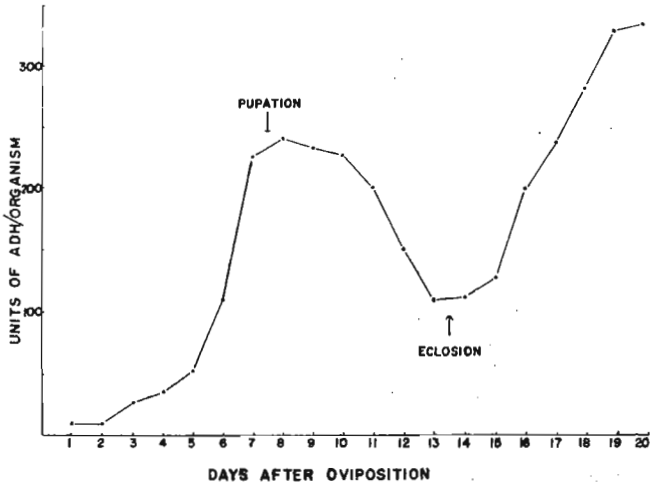
Developmental changes in alcohol dehydrogenase activity in Drosophila hydei.

The activity of alcohol dehydrogenase (ADH) has been determined at specific times of development and adult life in D. hydei. A wild-type strain derived from a stock described by Berendes (1965) was studied. The method of synchronizing development and staging was substantially the same as reported by Berendes, except that the flies were reared on "Instant Drosophila Medium" (Carolina Biological Supply Company). Cultures were started by placing 3-4 week old adults into fresh food containers for a period of 2 hours. Offspring were then collected at 24 hour intervals following oviposition for a period of 480 hours. A constant temperature of 25°C was maintained throughout this time. Preparation of homogenates and assay for ADH activity was accomplished by the methods of Ursprung, Sofer and Burroughs (1970).



The pattern of change in ADH activity shown on the figure approximates that reported by Ursprung et al. (1970) for D. melanogaster. However, in D. hydei we observe a slower rate of decrease in ADH activity following pupation. At the mid-point of pupal life the level of activity is approximately 75% of the difference between maximum and minimum values, whereas in D. melanogaster the level of ADH activity is close to the minimum at the corresponding time. Following eclosion ADH activity increases for at least 6 days, reaching values higher than the peak at the time of pupation. Dunn, Wilson and Jacobson (1969) report similar findings in D. melanogaster. During this period of increase in the adult, changes in isozymic forms of ADH have been observed in both D. melanogaster (Dunn, et al.) and in D. hydei (Imberski, 1971).

References: Berendes, H.D. 1965 Chromosoma 17:35-77; Dunn, G.R., T.G. Wilson and K.B. Jacobson 1969 J. Exp. Zool. 171:185-190; Imberski, R.B. 1971 Isozyme Bull. 5:48; Ursprung, H., W.H. Sofer and N. Burroughs 1970 W. Roux' Arch. 164:201-208.

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Change of the ring gland in post-natal development of Drosophila melanogaster Canton S and in 1(2)gl mutant.

On permanent total preparations of the ring gland of Drosophila melanogaster, a study was carried out of the changes of cells and nuclei cell number and volume in peritracheal gland and corpora allata for 3 larval ages in the strain Canton S. The characteristics of the age groups are given in Table 1.

In the larvae mutant for the 1(2)gl gene, the condition of the ring gland was studied at the end of the 3rd larval age, and in the larvae which had survived 20-24 hours at larval stage (Table 2).

The cell number of the ring gland throughout 3 larval ages is unchanged and maintained at the level of 45-55 cells in the peritracheal gland and 18-25 cells in corpora allata.

The volume of nuclei and cells in both glands at the 1st two ages, as seen in Table 1, increases simultaneously, so that the ratio between the mean volume of nuclei and cells of the peritracheal gland, and the corresponding volume in corpora allata remains constant. However, at the period of the 3rd larval age the volumes of cells of peritracheal gland increase sharply, while the cells of corpora allata almost reach their maximal size by the end of the 2nd larval age and change very little during the 3rd larval age. In this connection, peritracheal cells begin to occupy predominant volume in the total structure of the ring gland.