Table 3. Average weights and rates of oxygen consumption for 1(1)EN7 pupae

Age in hr. after puparium formation	Fresh weight/ pupa in mg.		Dry weight/ pupa in mg.		O_2 consumption in cu. mm./ pupa/hr.		O_2 consumption in cu. mm./mg. dry wt./hr.	
	n	M. ± S.E.	n	M. ± S.E.	n	M. ± S.E.	n	M. ± S.E.
3 hr.	8	0.68 ± 0.04**	8	0.18 ± 0.01**	8	0.971 ± 0.112**	8	5.442 ± 0.548**
20 hr.	8	0.68 ± 0.02**	8	0.23 ± 0.01**	8	0.276 ± 0.071**	8	1.243 ± 0.324**
40 hr.	8	0.57 ± 0.07**	8	0.19 ± 0.01**	8	0.130 ± 0.017**	8	0.715 ± 0.131**
60 hr.	8	0.53 ± 0.04**	8	0.18 ± 0.01**	8	0.177 ± 0.015**	8	1.001 ± 0.094**
80 hr.	8	0.50 ± 0.05**	8	0.15 ± 0.01**	8	0.230 ± 0.057**	8	1.426 ± 0.274**
104 hr.	8	0.30 ± 0.04	8	0.14 ± 0.01	8	0.062 ± 0.021	8	0.465 ± 0.150
128 hr.	8	0.22 ± 0.02	8	0.16 ± 0.01	8	0.033 ± 0.013	8	0.208 ± 0.072
152 hr.	8	0.13 ± 0.01	8	0.11 ± 0.01	8	0.000 ± 0.000	8	0.000 ± 0.000

* Significant at .05 level ** Significant at .01 level

Table 4. Average weights and rates of oxygen consumption for y, w, spl, sn control pupae

Age in hr. after puparium formation	Fresh weight/ pupa in mg.		Dr. Weight/ pupa in mg.		O_2 consumption in cu. mm./ pupa/hr.		O_2 consumption in cu. mm./mg. dry wt./hr.	
	n	M. ± S.E.	n	M. ± S.E.	n	M. ± S.E.	n	M. ± S.E.
3 hr.	10	1.38 ± 0.02	10	0.38 ± 0.01	10	3.092 ± 0.076	10	8.244 ± 0.187
10 hr.	10	1.19 ± 0.03	10	0.36 ± 0.01	10	2.213 ± 0.066	10	6.261 ± 0.211
20 hr.	10	1.16 ± 0.02	10	0.34 ± 0.01	10	1.114 ± 0.037	10	3.340 ± 0.162
40 hr.	10	1.17 ± 0.04	10	0.35 ± 0.01	10	0.842 ± 0.083	10	2.433 ± 0.097
60 hr.	10	1.16 ± 0.02	10	0.35 ± 0.01	10	1.266 ± 0.049	10	3.620 ± 0.098
80 hr.	10	1.14 ± 0.02	10	0.34 ± 0.02	10	1.864 ± 0.070	10	5.542 ± 0.194

References: Novitski, E. 1963, DIS 37:51-53; Tate, M.W. and R.C. Clelland 1957 Non-parametric and Shortcut Statistics in the Social, Biological, and Medical Sciences (Interstate) Danville, Illinois; Willis, D.E. and C.P. Wright 1972, DIS 48:32.

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Juvenile hormone does not inhibit protein granule accumulation in larval fat body.

The fat body of many holometabolous insects, including D. melanogaster (1), accumulates large granules of protein during the hours before pupation. In the butterfly Calpodes ethlius this accumulation has been shown to be under the control of the molting hormone, ecdysone (2). Thomasson and Mitchell (3) have shown that in D. melanogaster, while ecdysone can induce granule accumulation, the granules appear too early for ecdysone to be the natural inducer. Furthermore, fat bodies incubated in vitro can form granules in the absence of ecdysone.

It was therefore speculated that the natural control might be an inhibition by juvenile hormone, with the granules appearing as soon as the juvenile hormone titer drops below a critical level. However, further experiments have now shown that addition to the cultures of "synthetic juvenile hormone (Calbiochem)" in concentrations as high as 0.06 mg/ml had no effect on granule formation.

The natural inducer in D. melanogaster therefore remains unknown. It is conceivable that the fat body responds to increasing protein concentrations in the hemolymph. Certain results reported in reference (3) are compatible with this possibility, though it was excluded as a possible mechanism in C. ethlius.

References: (1) von Gaukecker, 1963, Z. Zellforsch. 61; (2) Collins, 1969, J. Insect Physiol. 15; (3) Thomasson and Mitchell, 1972, J. Insect Physiol. 18.