

Ushakumari, A. and H.A. Ranganath. University of Mysore, India. Importance of sugar and yeast in the nutrition of *Drosophila*.

Experiments have been undertaken to study some aspects of nutritional requirements of *Drosophila* under laboratory conditions. The present research note deals with four different types of wheat cream agar media. They are (a) media without yeast and sugar; (b) media with yeast and without sugar, (c) media with sugar and without yeast, and (d) media with yeast and sugar. Ten different strains of *Drosophila* were exposed to these media. The populations of these were maintained at 22°C for 16 weeks by adopting the serial transfer technique of Ayala (1965). Four replicates were maintained for each set up. Adaptedness evinced by different strains of *Drosophila* in these media has been used as a parameter to assess the impact of variations in the constitution of the food media over the reproductive performance of *Drosophila*. The components of adaptedness measured in the present study are: (a) population size, (b) productivity, (c) mortality, and (d) flies per bottle. The observations of the present study are as follows:

(1) All the strains fail to breed in the media without yeast and sugar.

(2) In the media with yeast and without sugar, it was interesting to note that only *D.sulphurigaster neonasuta* was able to survive and reproduce during the 16 weeks of the experimental period, while all the other strains did not succeed to reproduce in this media.

(3) *Drosophila* strains under study were able to exploit and reproduce in the other two types of media, namely the media with sugar and without yeast as well as the media with sugar and yeast.

The mean values for the parameters of adaptedness assessed are presented in Table 1 and 2. Almost all the strains of *Drosophila* under study have attained better adaptedness values in the media with yeast and sugar than in the media with sugar and without yeast.

Thus, the differential impact of different media over the population fitness of *Drosophila* strains under study is striking. Further experiments are in progress to evaluate the role of different types of sugars and different species of yeast on the biology of these *Drosophila* strains.

Table 1. Mean values (for four replicates) along with Standard Errors for Population size, Productivity, Mortality, and Flies per bottle in the media with sugar and without yeast for ten different strains of *Drosophila*.

STRAIN:		PARAMETERS:			
		Population size	Productivity	Mortality	Flies/bottle
<i>D.s.sulphurigaster</i>	(3019.8)	41.77±2.71	22.98±2.01	20.09±1.37	12.85±0.71
<i>D.s.sulphurigaster</i>	(P-11)	45.98±5.73	32.75±5.12	27.98±3.27	14.15±1.77
<i>D.s.albostrigata</i>	(W-3)	75.38±4.03	50.53±4.56	39.77±2.26	23.19±1.24
<i>D.s.albostrigata</i>	(S-11)	34.96±3.30	26.33±2.88	24.23±0.96	10.76±1.02
<i>D.s.bilimbata</i>	(Gum-8)	44.57±3.63	18.80±1.98	14.02±2.91	13.71±1.12
<i>D.s.bilimbata</i>	(HNL-111)	38.23±2.59	23.08±0.58	16.50±0.73	11.77±0.79
<i>D.s.neonasuta</i>	(Polymorphic)	109.40±3.29	63.50±1.72	49.02±3.41	33.36±1.01
<i>D.s.neonasuta</i>	(Monomorphic)	48.25±1.79	24.03±2.24	17.93±2.24	14.85±0.55
<i>D.pulaua</i>	(V-6)	62.75±5.25	46.38±4.36	35.52±3.94	19.31±1.61
<i>D.pulaua</i>	(S-18)	47.98±2.32	32.63±3.24	25.21±2.45	14.72±0.72

Table 2. Mean values (for four replicates) along with Standard Errors for Population size, Productivity, Mortality, and Flies per bottle in the media with sugar and yeast for ten different strains of *Drosophila*.

STRAIN:		PARAMETERS:			
		Population size	Productivity	Mortality	Flies/bottle
<i>D.s.sulphurigaster</i>	(3019.8)	112.95±22.75	81.36±13.83	59.77±12.90	26.35±8.52
<i>D.s.sulphurigaster</i>	(P-11)	126.44±16.07	82.58±12.15	64.70± 9.03	36.78±4.68
<i>D.s.albostrigata</i>	(W-3)	167.64± 9.47	110.46±11.60	88.97± 7.19	48.77±2.76
<i>D.s.albostrigata</i>	(S-11)	132.68±19.09	106.95±13.52	86.98±12.65	38.55±5.59
<i>D.s.bilimbata</i>	(Gum-8)	123.43±19.19	77.78±14.87	62.78±11.30	35.94±5.55
<i>D.s.bilimbata</i>	(HNL-111)	114.86± 3.01	71.61± 4.15	53.87± 2.35	33.39±0.87
<i>D.s.neonasuta</i>	(Polymorphic)	243.29±11.37	146.38± 6.49	115.35± 5.10	70.75±3.33
<i>D.s.neonasuta</i>	(Monomorphic)	172.79± 5.85	96.16± 7.20	77.41± 5.03	50.20±1.68
<i>D.pulaua</i>	(V-6)	133.87± 6.06	109.95± 8.82	82.37± 7.47	39.58±1.31
<i>D.pulaua</i>	(S-18)	159.93±16.24	120.27±11.55	102.90±13.06	46.52±4.75

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Reference:

Ayala, F.J. 1965, Genetics 51:527-544.