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University of Mysore, Manasa Gangotri, India. Preliminary studies on the differences in the nutritional requirements in Drosophila.

For Drosophila, a satisfactory standard culture medium must be nutritious, inexpensive, have a high moisture content and a firm texture, and be resistant to mould and bacterial contamination. Most standard media contain sugar source, a grain base, agar, a mould inhibitor and yeast (Ashburner & Thompson,Jr 1978). Baumberger (1919) and Hassett (1948) have demonstrated that sugar was a dietary requirement and the role of different sugars on the biology of Drosophila.

The present project was undertaken to understand, the ecological differences, if any, under laboratory conditions among ecologically/phylogenetically closely placed forms of Drosophila.

D.melanogaster and D.ananassae are cosmopolitan species. They are sympatric in the domestic habitats. Morphologically they are different and taxonomically, D.melanogaster belongs to melanogaster subgroup while D.ananassae comes under ananassae subgroup. D.n.nasuta and D.n.albomicana are morphologically identical and they are cross fertile. These chromosomal races are allopatric in their distribution. Both belong to the nasuta subgroup of Drosophila.

Utilising these strains of Drosophila, preliminary studies have been made to record the relative preference of these forms to different sources of sugar, namely, glucose, fructose and sucrose. Flies were maintained on wehat cream agar media containing either glucose or fructose or sucrose or without any one of them. The relative preference of different strains to different sources of sugar as assessed by their 'overall population size' for over ten months is given in the Table:

	Wheat cream agar media with:			
Strain	Fructose	Glucose	Sucrose	No sugar
D.melanogaster	++	++	++	+
D.ananassae	++	+	+	-
D.n.nasuta	+++	++	+++	+
D.n.albomicana	++	+++	++	-

Relative prefrence: +++ > ++ > + > - .

D.ananassae and D.n.albomicana failed to maintain their population in a media which was devoid of sugars, while D.n.nasuta and D.melanogaster have managed to survive in sugarless media even after ten months. It appears that D.ananassae prefers the media with fructose than with glucose or sucrose, while D. melanogaster is found to have no such discrimination and it survives equally well on all the three types of media. For D.n.nasuta, media with fructose or sucrose are found to be more suitable, while D.n.albomicana maintains a better population size in the media with glucose than in others.

Thus, these preliminary experiments conducted for over a period of ten months do indicate the existence of 'subtle' differences between ecologically closed placed (D.melanogaster and D.ananassae) and between phylogenetically closed linked (D.n.nasuta and D.n.albomicana) forms of Drosophila in their preference to the media with different types of sugars. Further experiments are in progress to quantify these differences.

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References: Ashburner,M. & J.N.Thompson,Jr 1978, The laboratory culture of Drosophila, IN The Genetics and Biology of Drosophila, V2a:2-109 (Ashburner & Wright-eds), Academic Press, London; Baumberger,J.P. 1919, J.Exp.Zool. 28:1-81; Hassett,C.C. 1948, Biol.Bull. Woods Hole 95:114-123.