cholinergic neuron driver, significant phenotypes have been observed, including decreased lifespan and locomotor function.

As shown in Figure 1 (Top) 52-66% of light-adapted UAS-Aβ42$^{H29.3}$/*CyO* or UAS-Aβ42$^{H29.3}$ stocks recombined with the Cha-Gal4 driver fall to the bottom of the cylinder when the lights are turned off. In contrast only an occasional control fly (19B) shows this unusual behavior in response to lights off. Otherwise wild type stocks containing the *CyO* marked balancer chromosome also do not fall down in response to lights off (data not shown). This unusual "Lights-Off" behavior thus appears to be a result of the UAS-Aβ42$^{H29.3}$ insertion and does not depend on the presence of the Gal4 driver.

Western blot analysis confirms that only stocks where the UAS-Aβ42$^{H29.3}$ responder has been recombined with the Cha-Gal4 driver express detectable levels of Aβ42 protein (Figure 1 (Bottom)). The "Lights Off" phenotype is thus also unrelated to Aβ42 protein accumulation in neurons.

Discussion

H29.3 flies display a "Lights-Off" phenotype characterized by spontaneous falling to the bottom of a cylinder in response to a sudden light to dark transition. This unusual behavior is not dependent on the presence of a Gal4 driver, occurs in flies with no detectable Aβ42 expression, and is not seen in control flies. The phenotype thus appears to be independent of Aβ42 expression and depends instead on the presence of the H29.3 transgene insertion. We propose that this phenotype is related to disruption of an unknown genetic function by the P-element mediated insertion site of the H29.3 transgene. Caution should be used when interpreting neurological phenotypes of stocks containing the H29.3 transgene, especially for visually mediated phenotypes.

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Analysis of morphometric traits among few species of *Drosophila*.

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Understanding the microevolutionary basis of macroevolutionary change has been challenging evolutionary biologist for decades. Recently fresh attention is given to the origin and control of morphological variation (Hallgrimsson and Hall, 2005), since accumulation of small variation for several generations provides the raw material for natural selection and understanding of

the factors which promote/buffer it. It is a new area for understanding how morphological evolution proceeds. To understand accumulation of smaller variation, the closely related species provides an excellent material. So as the *montium* species are proved to be very closely related by different authors by analyzing them karyotypically, biochemically, enzyme and also at molecular level. But there are no reports on morphometric traits. By recognizing this lacuna, the present work has been undertaken to study morphometric traits, such as sternopleural bristle number, wing length, and wing width in the *montium* group a subgroup of *melanogaster* and *D. melanogaster* used for comparison.

Fly stocks used for the present analysis were *D. melanogaster, D. kikkawai* and *D. jambulina*. Experimental stocks used were established by the 50 isofemale lines collected from nature and maintained in the laboratory since 15 years under constant temperature 22±1°C and 70% relative humidity. The eggs were collected by following the method of Delcour (1969). Approximately 150 eggs were placed in quarter pint milk bottles containing wheat cream agar medium. When adults emerged, virgin females and males were isolated within 3 hr of eclosion and used for wing length/wing width and sternopleural bristle number measurement. Male and female flies were measured separately using the method of Hegde and Krishna (1999). The sternopleural bristles on left sternal plates were counted and recorded; 30 replicates were maintained for each metric character and data were subjected to Student 't' test.

The metric characters measured for three species are depicted in Table 1. The sternopleural bristle number for all three species ranges between 5-11. Sexwise difference ranges between 6-11, 5-10, 7-10 in males, and in females it is 6-10 in *D. melanogaster,* and it is 7-10 in both *D. kikkawai* and *D. jambulina,* respectively (Figure 1a). Intra and interspecies difference is non significant. However, sternopleural bristle number is higher in females compared to males in all the three species.

Table. 1. Mean ± SE for the metric characters analyzed for three species of *Drosophila.*

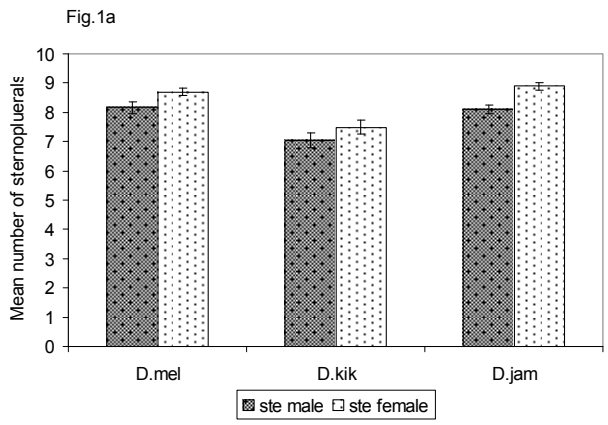
Species	Sternopleurals		Wing length		Wing width		WL/WW ratio	
	males	females	males	females	males	females	males	females
D. melanogaster	8.1667 ± 0.1982	8.7000 ± 0.1369	1.8843 ± 0.0122	2.0110 ± 0.0112	0.8770 ± 0.0079	0.9277 ± 0.0080	2.1500 ± 0.0089	2.1710 ± 0.0185
D. kikkawai	7.0333 ± 0.2514	7.5000 ± 0.2236	1.6593 ± 0.0144	1.8153 ± 0.0140	0.7403 ± 0.0093	0.8110 ± 0.0080	2.2470 ± 0.0205	2.2410 ± 0.0161
D. jambulina	8.1000 ± 0.1385	8.9000 ± 0.1300	1.5753 ± 0.0103	1.6723 ± 0.0104	0.6993 ± 0.0077	0.7560 ± 0.0103	2.2561 ± 0.0204	2.2217 ± 0.0245

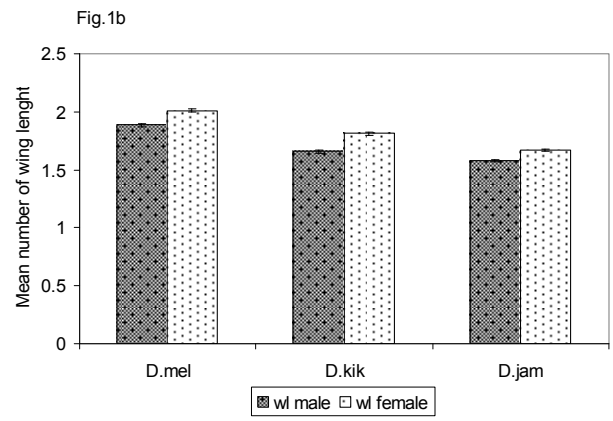
Wing length among three species range between 1.42-1.65 mm. There is a difference in the wing length between male and female in all the three species (Figure 1b). Inter- and intra-species differences are non-significant. Wing width on the other hand ranges between 0.56-0.83mm (Figure 1c). The greater wing width is observed in *D. melanogaster* compared to other two species. WL/WW ratio is depicted in the Table 1. Further no difference was observed among the species studied could be due to breeding of species for a long time in almost constant laboratory environment. The difference observed was larger in the natural population.

The present basic work enabled us to study the metric characters in entire *Drosophila* group is with less variable. Literature survey revealed the phenotypic variation increase in case of variation in temperature (Precht *et al.,* 1973; Cossins and Bowler, 1987; Leather *et al.,* 1993). Stress increases the phenotypic variance of most quantitative traits (Hoffmann and Parsons, 1997; Hoffmann and Hercus, 2000). But the variance in the wild collected individuals is greater than that of laboratory

grown flies (Coyne and Beecham, 1987; David *et al.,* 1997; Gibert *et al.,* 1998). This could be genetic or non genetic.

In the present study, the species are closely related and interesting to ecologists for many reasons, and it could be the accumulation of divergence leading them to diverge further from the main stem. Though they achieved a species level, the difference is non-significant for all the metric characters measured. The parameters, such as sternopleural bristle number, wing length, and wing width measured among three species have revealed that range of bristle number, length and width varies, but not at the significant level. Interspecies comparison shows that sternopleural bristle number is more in *D. melanogaster* compared to other two species. Mean difference is statistically non-significant. It has been also reported by the other authors that geographic clines lack clear genetic divergence in morphology in different strains and species of *Drosophila* (Sokoloff, 1966; Kitagawa *et al.,* 1982).





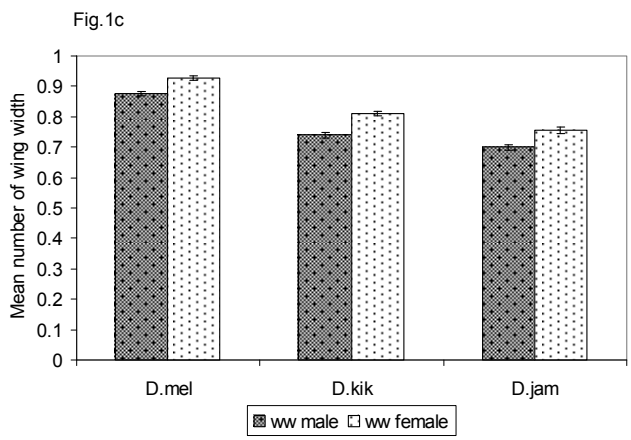


Figure 1. Morphometric traits in males and females of *D. melanogaster, D. kikkawai and D. jambulina*; a) sternopleural bristle number, b) wing length, c) wing width.

In *Drosophila,* females are larger than males for most body dimensions and also differ in pigmentation, the number of abdominal segments structure, genitalia, behaviour, and many other features. In the present study there is a slight variation in wing length, wing width, and number of sternopleural bristles among females and males. Females show slightly higher values than males. Further, Church and Robertson (1996) demonstrated that male and female flies diverge at the beginning of the third larval instar for total body content of DNA, RNA, and protein. Though larger, as adult females emerge earlier than males suggesting different rate of development is 4% faster than males. The analysis of the mouth parts showed that they are able to consume more food in a given time than males. Further, they have more feeding time than males, and also female beings emerged first, they are the first one to utilize the resources when compared to males. There must be the large

mouth parts, which are advantageous to the female beings to develop as normal. So as in the other metric traits. Perusal of literature reveals, the species under study are closely related. The present study also showed there is a similarity among the species with respect to metric traits.

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The effects of dibutyl phthalate on the development of *Drosophila melanogaster.*

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Abstract

In this study, the developmental effects of a well-known plasticizer dibutyl phthalate (DBP) were determined in wild type *Oregon* strain of *Drosophila melanogaster*. The 72 h larvae of *D. melanogaster* were exposed to four concentrations of DBP-acetone solution. After 72 hours, the pupae were counted. The developmental times of DBP exposure groups were found extended comparing to the control group. The reductions were found statistically significant compared to the control ($P < 0.05$).

Key-words: Dibutyl phthalate, plasticizer, *Drosophila melanogaster*, development, mean pupation time.

Introduction

In recent years, the contamination with phthalate esters (1,2-benzendicarboxylates) (PAEs) turned into ubiquitous in the soil, water, and air (Steiner *et al.*, 1998). The increased contamination with phthalate is a common problem worldwide due to its widespread utilization areas. Therefore, the concerns about possible harmful health effects have been raised (Swan *et al.,* 2005; Hauser *et al.,* 2006).

PAEs including dibutyl phthalate (DBP) are widely used in PVC industry and to a lesser extent in the non-polymer industry products (children's toys, sealants, paints, printing inks, cosmetics, varnishes, shampoos, cables or fabrics, insect repellents etc.) (Heudorf *et al.*, 2007). PAEs