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Karyotype of Drosophila nasuta.

D. nasuta subgroup of the immigrans group created by Wilson et al (1969) includes 8 morphologically similar species. Males of this subgroup have silvery markings on the frons, in all but one species. However, whitish to silvery sheen over the entire frons is present only in D. albomicans, D. kohkoa, D. kepulauana and D. nasuta Lamb (1914). The species described here is characterized by silvery sheen over the entire frons but differs cytologically from that of D. albomicans, D. kohkoa and D. kepulauana. Though Ray Chaudhuri and Jha (1969) have given an account on the cytology of D. nasuta, it is not known to which species proper it belongs under nasuta subgroup. The karyotype of D. nasuta sensu strictu is yet unknown. Hence the karyotype is reported here.

The flies collected from Soundatti (Mysore state) are big and yellowish in color with silvery frons. There is brown longitudinal streak on pleura reaching back to the wing base in both males and females. Other morphological characters are similar with that of D. nasuta reported by Okada (1964). The metaphase karyotype of the larval neuroblast cells (Fig. 1) consists of a pair of rods which represents X chromosome in females, one of which is replaced by V-shaped Y chromosome in males, a pair of V's (chromosome 2), a pair of double length rods (chromosome 3) and a pair of dots (chromosome 4). No additional heterochromatin is found in the dot.

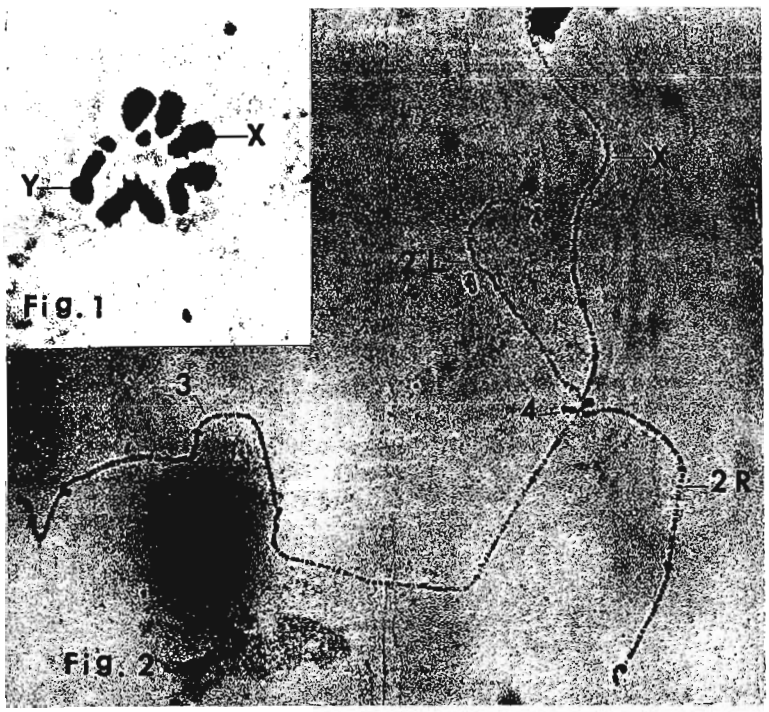

Fig. 1. The Metaphase Karyotype of male larval neuroblast cell.

Fig. 2. Salivary gland chromosomes

The salivary gland chromosomes show four long arms and one small arm as shown in the fig. 2. Centric heterochromatin is practically absent except for a little between 2L and 2R. Like other species of the subgroup, here also a loop, which is not an inversion is frequently observed in the basal region of 2R. The longest arm represents the double length rod of the metaphase karyotype and the arm next to third chromosome in length is the X chromosome and the remaining two long arms are the left and right arms of the metacentric second chromosome. The small arm represents the dot chromosome of the somatic metaphase.

The species under study is allied to D. albomicans, D. kepulauana and D. kohkoa in having entire frons with silvery sheen. This is also true with the original species, D. nasuta according to published notes for which cytology is not known. Based on the cytological analysis, the species here described differs from D. albomicans in that D. albomicans

has 2n=6, whereas here we have 2n=8. It also departs from D. kepulauana in having V-shaped Y chromosome and basic type of dots while in D. kepulauana Y is rod shaped and the dot chromosomes with added heterochromatin are slightly thicker and longer. The other member of the same series with entire silvery frons -- D. kohkoa, is characterized by the pinched constriction in the third chromosome which is always accompanied by the dot. This species also has a small amount of added heterochromatin to the dot which gives it a comma-shaped appearence (Wilson et al, 1969). This has not been observed in the present species. The karyotype described by Ray Chaudhuri and Jha (1969) consists of 6 pairs of chromosomes in metaphase configuration and 6 arms (5 long and one short arm) in salivary gland nuclei. Our findings are different from this.

Recounting the similarities and differences that are exhibited by the members of the nasuta subgroup, the species herein described must be either D. nasuta sensu strictu or a new species of the nasuta subgroup for which confirmation is needed. Further this species is highly polymorphic in having duplications and deficiencies and a multitude of inversions which will be presented elsewhere.

Acknowledgements: The authors are very grateful to Dr. M.R. Rajasekarasetty, Professor and Head of the Department of Zoology, University of Mysore, Manasagangotri, Mysore for his advice and encouragement. We are thankful to Mr. Ramakrishna Raju for preparing Photomicrographs. This work is supported by the department of Atomic Energy, Government of India.

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Sanjeeva Rao, M. and S. U. Devi. Osmania University, Hyderabad-7, AP., India. Induction of mutations in D. melanogaster with radioisotypes - ^{90}Sr and ^{131}I.

Even though much work was done on the induction of mutations in Drosophila by ionizing radiations and chemicals, the possible mutagenic effects of radioisotopes have received little attention. Blumel (1950) reported that phosphorus-32 induces mutations in Drosophila while Rubin (1950) observed mutagenicity in microorganisms. Sr^{90} and I^{131} are more powerful radioisotopes than phosphorus-32 and to assess their genetic damage in Drosophila the following experiments were carried out.

Two concentrations of each isotope were tried. The isotope was mixed in food medium. Flies were allowed to lay eggs on this medium and the offspring were allowed to grow on the medium containing the isotope. The treated males were crossed individually with 3 virgin females of y sc^{S1} In-49 sc^{8};bw;st for three days only to assess the genetic damage in spermatozoa alone. The F_1 females were mated individually with y sc^{S1} In-49 sc^{8} males while the males were mated with bw;st females to score for sex linked recessive lethals and translocations, respective in the F_2 generation. The results are presented in Table 1.

Table 1

Treatment	Sex linked recessive lethals				Translocations			
	T	l	%	Chi-square value	T	l	%	Chi-square value
1. Control	505	1	0.2	-	712	-	-	-
2. Sr^{90} 0.2µcc in 100cc of food	329	8	2.12	9.3	439	3	0.68	4.94
3. Sr^{90} 1.0µcc in 100cc of food	268	5	1.86	6.33	247	3	1.21	8.74
4. I^{131} 1.00µcc in 100cc of food	436	8	1.83	6.64	-	-	-	-
5. I^{131} 2.00µcc in 100cc of food	363	5	1.40	4.28	347	2	0.6	4.2

T = Total number of X chromosomes or F_1 sons scored; l = Lethals recorded; t = translocations recorded

These preliminary studies indicate that ^{90}Sr and ^{131}I cause mutations in D. melanogaster similar to phosphorus - 32.