Steganinae).

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Chromosomal polymorphisms in natural populations of *Drosophila malerkotliana.*

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Structural aberrations in the chromosomes of *Drosophila* can be distinctly observed due to presence of polytene chromosomes. Inversions, particularly paracentric inversions, are very common in *Drosophila* (Dobzhansky,1950; da Cunha, 1960; Sperlich and Pfriem, 1986). Presently, we are studying genetic polymorphisms at all the three levels, *i.e.*, chromosomal, protein, and nucleotide, in different natural populations of *bipectinata* species complex. *Drosophila bipectinata* species complex is a group of four closely related species that includes *D. bipectinata, D. parabipectinata, D. malerkotliana*, and *D. pseudoananassae*. Phylogenetic relationships among these four species have been documented by earlier researchers (Bock, 1971; Singh and Banerjee, 2012; Singh and Banerjee, 2016; Tomimura, 2005). Chromosomal polymorphisms in *D. malerkotliana* has been reported by some of the population geneticists, and their study has revealed that this species is chromosomally polymorphic (Jha and Rahman, 1972; Naserulla and Hegde,1993; Singh and Singh, 2015). In this report we are describing about four new paracentric inversions, which have been observed in two distantly located natural populations of *D. malerkotliana*.

Isofemale lines established from two natural populations of *D. malerkotliana* collected from Varanasi (Uttar Pradesh) and Bilaspur (Chhattisgarh) were analyzed for chromosomal polymorphisms. These two places are separated from each other by a distance of about 530 km. Third instar larvae randomly selected from isofemale lines were dissected in insect saline to isolate salivary glands, and the glands were then transferred onto cleaned glass slides. The glands were stained in lacto-aceto-orcein and squashed in mountant (60 percent acetic acid + lactic acid in 1:1 ratio) for polytene chromosomes preparation. Hundreds of larvae subjected to this study from the two natural populations enabled us to identify eleven different types of paracentric inversions. Out of these, four new inversions were observed for the first time in this species. Among the four new inversions, three were located on autosomal chromosomes and one in the X-chromosome. Two inversions, *i.e.*, median and basal, were found to be present in 3L and a single basal inversion was present in 2R. A single X chromosome inversion was median in position in the left arm of X chromosome. Figure 1a-d depicts the microphotographs of these inversions in different chromosome arms of

D. malerkotliana. Figure 2 shows line diagrams indicating the break points of these inversions, and the inversion breakpoints have been identified by following the salivary gland chromosomal map of *D. malerkotliana* constructed by Jha and Rahman (1972).

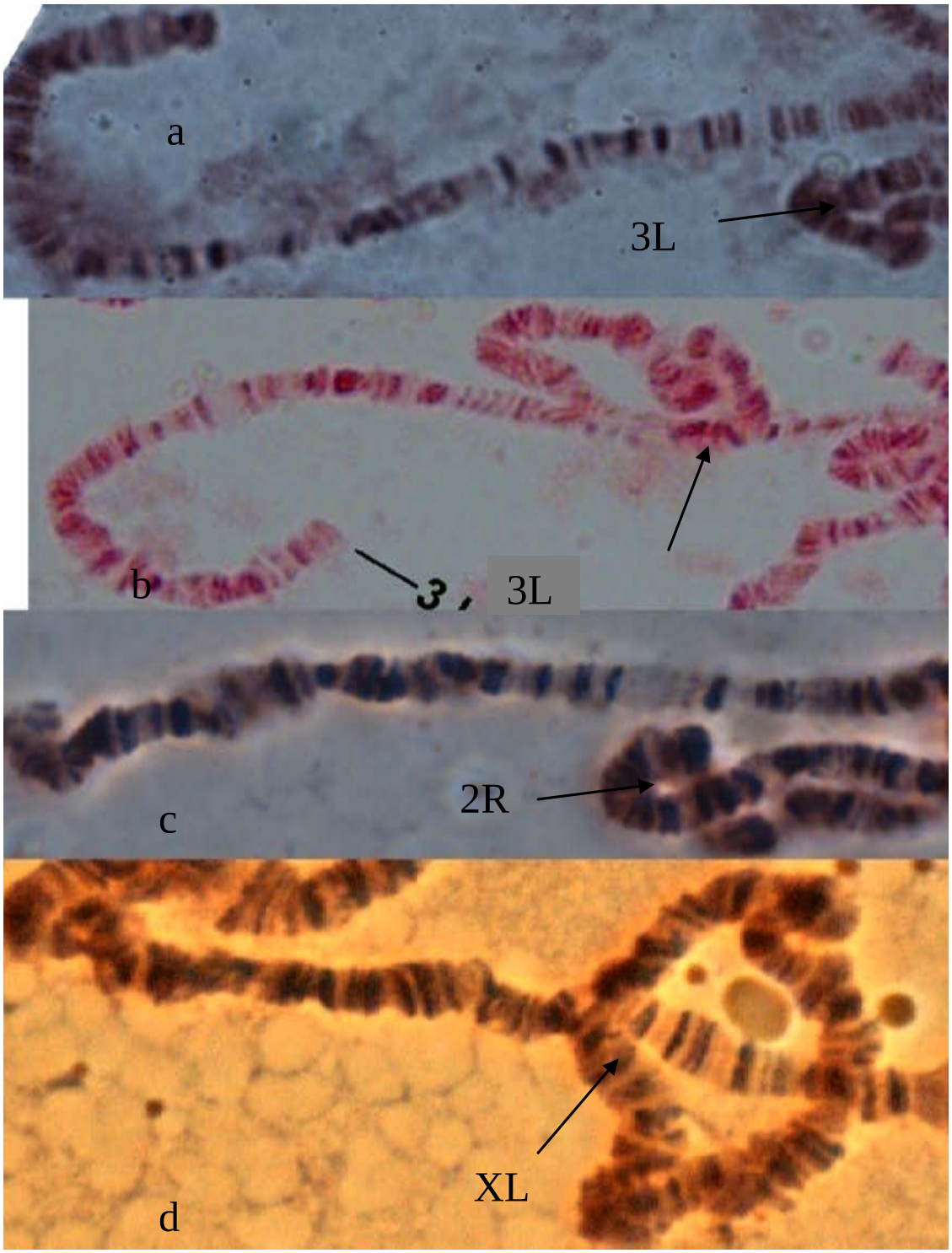
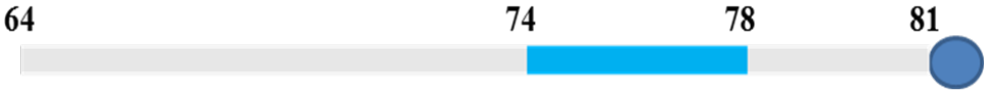


Figure 1. a-d: Microphotographs showing four new inversions in *D. malerkotliana.*

- Basal inversion of 3L (Figure 1a): Observed from Bilaspur population. It extends between the regions 81 to 77 occupying nearly 20% of the chromosome arm.

- Median inversion of 3L (Figure 1b): Detected in Bilaspur population and it extends between the regions 78 to 74. It involves about 20% length of the chromosome arm.



- Basal inversion in 2R (Figure 1c): Observed from both populations and occupies about 30% of the chromosome arm.

- Median inversion in XL (Figure 1d): Observed in Varanasi population, extends approximately 30% of the chromosome arm.

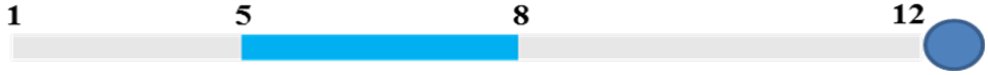


Figure 2. Line diagrams indicating the break points of inversions.

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