Bull. zool. Surv. India, 3 (1 & 2) : 103-105, 1980

CHROMOSOMES OF FIVE SPECIES OF APHIDS (HOMOPTERA : APHIDIDAE)

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ABSTRACT

Chromosomes of five species of aphids viz. *Aphis nerii* B.d.F., (2n = 8) ; *Eriosoma lanigerum* (Hausman) ; *Myzus persicae* (Sulzer), (2n = 12) ; *Megoura lespedezae* (Essig & Kuwana) (2n = 14) and *Aulacorthum solani* Kalt. (2n = 10) were studied and their morphometric analysis was carried out.

INTRODUCTION

The chromosomes of Indian aphids have attracted the attention of workers very recently. Till date twenty three species of aphids are know chromosomally. Behura (1978) has given chromosome numbers in six species while Kurl & Mishra (1979) and Khuda-Buksh (1979) have given chromosome numbers in five species of aphids. Mishra & Kurl (1979) have reported variation in chromosome number in *Myzus persicae* (Sulzer). Sex chromosomes in seven species of aphids are delt with by Parida (1979). Behura & Bohidar (1979) and Behura & Dash (1979) have given chromosome numbers in eleven species of aphids. However the karyotypes in only two species of *Aphis* are available (Kulkarni & Kacker 1979).

The present paper deals with the chromosomes of five species of aphids viz. *Aphis nerii* B. d. F. ; *Eriosoma lanigerum* (Hausman) ; *Myzus persicae* (Sulzer) ; *Megoura lespedezae* (Essig & Kuwana) and *Aulacorthum solani* Kalt. The morphometric analysis of their chromosomes was carried out and karyotypes for these species were constructed.

Material & Methods :

Embryos from only apterous viviparous females were used for chromosome preparations. The detailed collection data for these species is given in Table I. The technique employed for cytological preparations was similar to that mentioned earlier by Kulkarni & Kacker (1979).

Observations and Remarks :

1. *Aphis nerii* B. d. F. : The diploid chromosome number in *Aphis nerii* B. d. F. was observed to be (2n = 8 plate IV A), which confirms the earlier observations (Behura 1978). However, we have been able to construct the karyotype for the species (Plate V a). The morphometric analysis of the chromosome pairs revealed that the relative percentage lengths in each of the four pairs were 40.83, 24.40, 22.25 and 12.50 respectively. This showed the considerable accumulation of the chromatin material in the first pair where as

TABLE 1

Sl. No.	Name of the species	Host	Date of collection	Locality
1.	*Aphis nerii* B.d.F.	*Calotropis gigentia*	22.2.79	Golf Club, Calcutta.
2.	*Eriosoma lanigerum* (Hausman)		12.3.79	Mashobra, Simla (H.P).
3.	*Myzus persicae* Sulzer	*Chrysanthum indicum*	8.3.79	Municipal rest house Solan (H.P.)
4.	*Megoura lespedezae* (Essig & Kuwana)	Unidentified	8.3.79	Narang, Solan (H.P.).
5.	*Aulacorthum solani* Kalt.	*Hydrenzia* sp.	10.3.79	Palace garden, Chail (H.P.)

TABLE 2

Table showing relative percentage lengths of autosomal pairs.

Sl. No.	Name of the species	Autosomal pair Nos. 1	2	3	4	5	6	7
1.	*Aphis nerii* B.d.F.	40.83	24.40	22.25	12.50	—	—	—
2.	*Myzus persicae* Sulzer	26.58	22.61	18.65	16.25	8.73	7.14	—
3.	*Megoura lespedezae* (Essig & Kuwana)	24.28	21.69	18.82	11.06	9.33	7.90	6.89
4.	*Aulacorthum solani* Kalt.	37.34	31.43	16.18	8.26	5.77	—	—

the second and third pairs are more or less equal in size. The last pair is considerably smaller in percentage length.

2. *Myzus persicae* (Sulzer) : 2n number in this species was observed to be 12, (Plate IV C & D). Rou Yen Sen and Robinson (1966) reported similar number. Size comparison between the chromosome pairs did reveal a difference but not as wide as that in the previous species. The chromatids were separated to a considerable extent and appeared like banded chromosomes. Difference in relative lengths when compared between pair numbers 1-2 ; 3-4 and 5-6 showed very similar lengths among themselves. One of the homologue of pair number two showed a deeply stained arm which may presumably due to non separation of the chromatid ; (Plate V b).

3. *Eriosoma lanigerum* (Hausman) : This species had the diploid chromosome number 12 ; (Plate IV B). Similar number for the species has been reported earlier by Rou Yen Sen and Robinson (1966). The chromosome preparation in this species was not satisfactory thus we were unable to construct the karyotype.

4. *Megoura lespedezae* (Essig & Kuwana) : Diploid chromosome number in *Megoura lespedezae* (Essig & Kuwana) was seen to be 14 ; (Plate IV F). On comparison of the karyotype it was found that first and second paris were the largest in the complement measuring 24.28% and 21.69% respectively, which accounts for nearly half of the total chromatin material. Remaining pairs showed a gradual size reduction (Table 2, Plate V C).

5. *Aulacorthum solani* Kalt. : 2n = 10 was observed in *Aulacorthum solani* Kalt. (Plate IV E). As revealed from the relative percentage lengths of each of the chromosome pairs (Table 2 ; Plate 2, d), first two pairs share considerable amount (approximately 69%) of the total chromatin material while the last pair constitutes only 6%.

ACKNOWLEDGEMENTS

The authors are indebted to the Director, Zoological Survey of India for the facilities for the study & encouragement. Thanks are due to Dr. L. K. Ghosh for confirming the identification of the aphid species.

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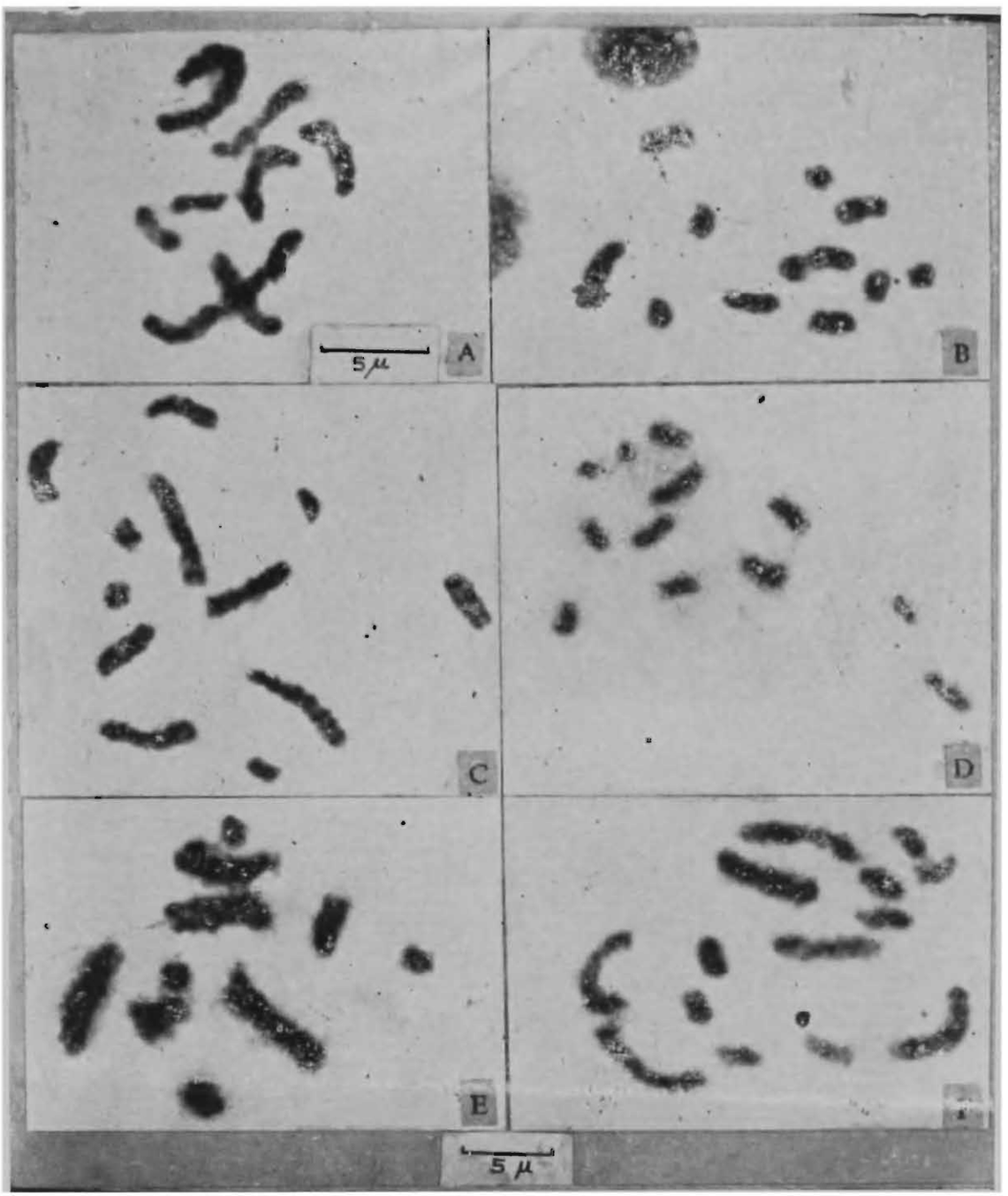

A. *Aphis nerii* B.d.F. 2n = 8 ; B. *Eriosoma lanigerum* (Hausman) 2n = 12 ; C, D. *Myzus persicae* (Sulzer) 2n = 12 ; F. *Megoura lespedezae* (Essig & Kuwana) 2n = 14 ; E. *Aulacorthum solani* Kalt. 2n = 10.