

KARYOTYPIC STUDIES OF FRESHWATER PRAWN *MACHROBRACHIUM ROSENBERGII*

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ABSTRACT

Chromosomal studies were conducted on *Macrobrachium rosenbergii*. On the basis of 50 metaphase plate counts, 38 metacentric, 14 sub metacentric and 66 telocentric chromosomes ($2n = 118$) were observed. The total length of the genome was recorded to be 34.2 micron.

Macrobrachium rosenbergii being an important species of palaemonid prawns draws more attention because of its commercial value, as it has been reported that the males grow 1.4 times larger than the females (Sagi *et al.*, 1986). Thus, identification of males at the earlier stages of life and giving them more suitable atmosphere may prove still better in the performance of their somatic growth. Moreover, the karyological investigation will be significant for better understanding of their evolutionary trend and position in taxonomical hierarchy. For genetic manipulation and ploidy induction studies also this information is very important. The present paper deals with the precise number of the chromosomes, genome length, karyogram and idiogram of *macrobrachium rosenbergii*.

Live post larvae of *M. rosenbergii* were reared in fibre glass pools. Before the study, they were kept in an aquarium and were allowed to swim in water having Colchicine (0.01%). After about 3-3.5 hrs, post larva was crushed in a homogeniser and subjected to hypotonic treatment with potassium chloride (0.56%) for 25 minutes. It was washed with freshly prepared acetoethanol solution (1:3). The whole mass was centrifuged at 1000 rpm for 10 minutes. This process was repeated three times. The chromosomal spread were prepared on clean, cold and dry slides; air dried and stained in Giemsa (10%) for 25 minutes and viewed under oil immersion (100 X) lens of a compound microscope.

Observations on karyological investigation were based on counting of 50 metaphase plates (plates 1 & 2). The diploid chromosomes were ascertained to be 118 in number on the basis of mode value. This number is in accordance with the result of Komagata *et al.*, (1988) and Justo *et al.*, (1991). The morphological structure of the chromosomes is 38 metacentric, 14 submetacentric and 66 telocentric

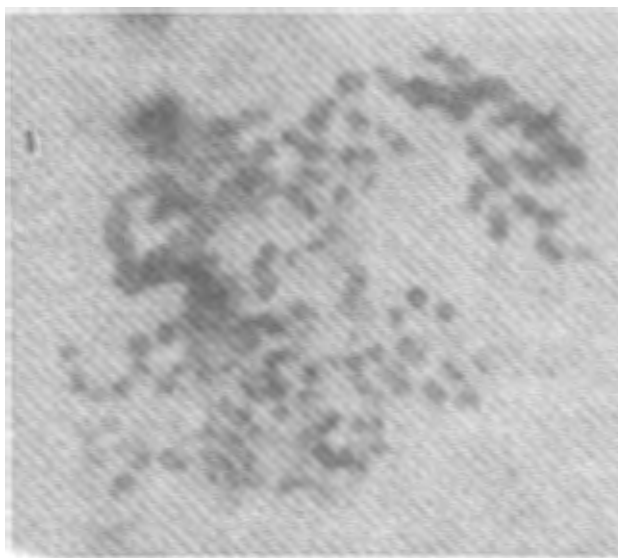


Plate 1 : Chromosomal spread (X 500)

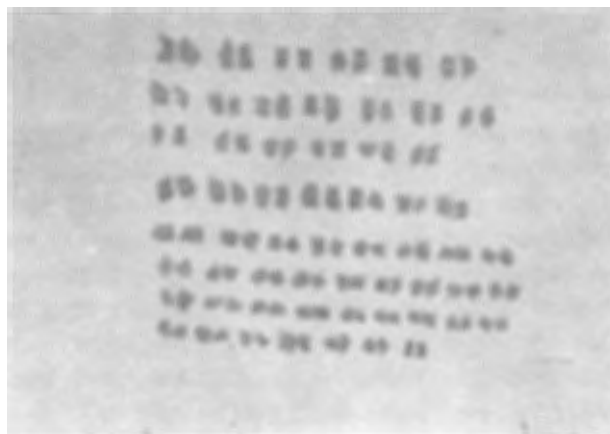


Plate 2 : Karyotype of *M. rosenbergii* (X 500)
($2n = 118$)

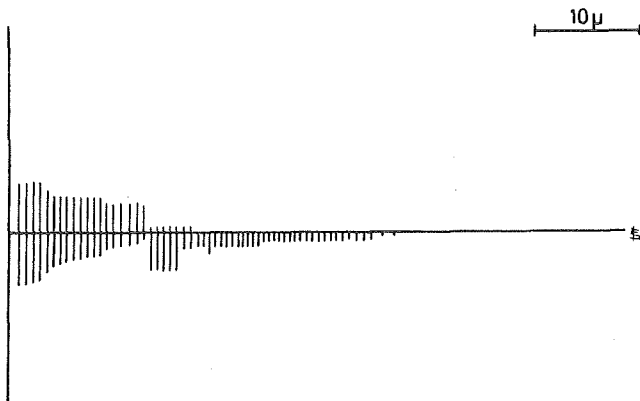


Fig. 1 : Idiogram of *M. rosenbergii*

chromosomes. From the karyotype, an idiogram was prepared (Fig.1). The length of the homologous pair of chromosome varies from 0.7 to 1.8 microns. The total length of genome was recorded to be 34.2 microns. Niyama (1959,1962) is probably the best starting point for the decapod karyology. Lobsters, penaeid and non-penaeid prawns appear to be diploid with no evidence of sex chromosomes morphologically distinct from the autosomes (Malecha, 1983). Milligan (1976) karyotyped three penaeid species *P. aztecus*, *P. setiferus* and *P. duorarum*. Goswami (1985) also studied the karyomorphology of *P. aztecus* and reported 2n chromosomes to be 88. Mittal and Dhall (1971) showed that 2n number of chromosomes of *M. siwalikensis* is 100.

The present investigation on *M. rosenbergii* chromosomes is in accordance with the study of Komagata *et al.*, (1988) and Justo *et al.*, (1991). However, the type of the chromosomes is not in accordance with Justo *et al.*, (1991) and Ahmed & Nayak (1991). The difference may be due to the dose variation of colchicine as a pretreatment. Similar difference has also been observed by Beck & Bigger (1980).

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