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## Chromosomes and their meiotic behavior in twelve species of the subfamily Harpactorinae (Hemiptera: Heteroptera: Reduviidae) from north India

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### Abstract

The chromosome complements and male meiosis of 12 species belonging to the subfamily Harpactorinae from north India have been described for the first time. All the species show twelve pairs of autosomes and X multiplicity with 9 species having  $X_1X_2X_3Y$  and 3 species having  $X_1X_2Y$  sex mechanism. The general course of meiosis in all the presently studied species is fairly uniform. Autosomes show a high degree of decondensation and sex chromosomes are condensed during the diffuse stage. Single terminal chiasma per bivalent is seen in all except *Sycanus croceovittatus* Dohrn, which has two terminal chiasmata in one or two bivalents. A regular arrangement of chromosomes at metaphase I has been observed in 7 species, but in the rest, no definite pattern is recorded. In *Euagoras erythrocephala* Livingstone and Ravichandran, more than one type of arrangement is seen. At metaphase II, autosomes form a ring in the center of which lies the pseudomultivalent in all the species excepting *Rhynocoris costalis* (Stål). In *Sycanus croceovittatus*, a proper pseudotetralent is lacking. Cytogenetic trends within the subfamily have been discussed in the light of newly added cytogenetic data of 12 species, which may later be used in tracing the evolution of chromosomes in Harpactorinae.

**Key words:** Autosomes, X multiplicity, diffuse stage, metaphase I and metaphase II

### Introduction

Reduviidae is the largest family of the predaceous land Heteroptera and includes about 6500 species in 930 genera and 22 subfamilies. Harpactorinae, a large and diverse subfamily of Reduviidae, includes about 288 genera and 2059 species distributed worldwide (Maldonado 1990). In India, 156 species in 41 genera of this subfamily have been listed by Ambrose (2006).

Chromosome numbers have been reported for 153 species of Reduviidae worldwide. The modal diploid number of autosomes ranges from 10 to 34 with a mode at 22. The cytogenetic data for the subfamily Harpactorinae, as compiled by Ueshima (1979), Poggio *et al.* (2007), and Kaur *et al.* (2012), refers to 34 species worldwide which include 12 from India. Within Harpactorinae, the modal diploid autosome number is 24 and both simple and multiple sex chromosome systems are prevalent. In the present paper, chromosome complements and meiotic behavior of 12 species of Harpactorinae collected from north India have been described for the first time. Also, we tabulate the entire chromosomal data on Harpactorinae, and cytogenetic trends within the subfamily, are discussed in the light of the newly added data.

### Materials and methods

Adult males of *Rhynocoris kumarii* Ambrose and Livingstone, *Rhynocoris costalis* (Stål), *Rhynocoris* sp.1, *Sycanus croceovittatus* Dohrn, *Henricohahnia typica* (Stål), *Irantha armipes* (Stål), *Sphedanolestes himalayensis* Distant, *Velinus annulatus* Distant, *Villanovanus dichrous* (Stål), *Coranus* sp., *Euagoras plagiatus* (Burmeister), and *Euagoras erythrocephala* Livingstone and Ravichandran were collected from places in north India. Live specimens were dissected to remove gonads, which were fixed in Carnoy's mixture (absolute alcohol: acetic acid,