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New cytogenetic data on Coreoidea (Hemiptera: Heteroptera) with special reference to Coreidae

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Abstract

Some cytogenetic aspects of six Chinese species of Coreoidea were studied. The material included five species from the family Coreidae: *Hydarella orientalis* (Distant), *Homoeocerus bannaensis* Hsiao, *Cletus graminis* Hsiao & Cheng, *Paradasynus longirostris* Hsiao, *Acanthocoris scaber* (Linnaeus), and one species from the family Stenocephalidae: *Stenocephalus femoralis* Reuter. All species show holokinetic chromosomes, post-reductional meiotic division of XO sex chromosomes, a pre-reductional type of meiosis for autosomes and m-chromosomes, intersticial chiasmata in most autosomes, and one chiasma per bivalent in male meiosis. In the species studied, the diploid chromosome number ranged from 13 to 21. It was 13 in *S. femoralis* (10 + 2m + XO), 15 in *Hy. orientalis* (12 + 2m + XO), 17 in *Ho. bannaensis* (14 + 2m + XO) and *C. graminis* (14 + 2m + XO), 19 in *P. longirostris* (16 + 2m + XO), and 21 in *A. scaber* (18 + 2m + XO). *Hy. orientalis* represents the first cytogenetically studied species in subfamily Hydarinae. The phylogenetic relationships among Coreoidea are briefly discussed from a cytogenetic point of view.

Key words: Coreoidea, Coreidae, Stenocephalidae, chromosome, karyotype evolution

Introduction

The Coreoidea include at least 2000 species, which are distributed worldwide, but more abundant in the tropics and subtropics. Cytogenetic reports for 170 species of Coreoidea are available before this study (Ueshima 1979; Manna & Deb-Mallick 1981; Sands 1982; Manna 1984; Motzko & Ruthmann 1984; Colombo & Bidau 1985; Dey & Wangdi 1988; Satapathy & Patnaik 1989; Papeschi & Mola 1990; González-Garcia *et al.* 1996; Cattani & Papeschi 2004; Bressa *et al.* 2005; Franco 2005; Kaur *et al.* 2006; Papeschi & Bressa 2006; de Souza *et al.* 2007a; de Souza *et al.* 2009). Apart from the general features of heteropterans cytogenetics, Coreoidea are characterized cytogenetically by holocentric chromosomes with kinetic activity in the telomeric region; a sex determining system of the XO type; a pair of achiasmatic m-chromosomes that associate in a pseudobivalent at the center of the metaphase I plate and undergo prereductional division; and, in general, an interstitial autosomal chiasma (Wilson 1905; Ueshima 1979; Manna 1984; Papeschi & Mola 1990; Bressa *et al.* 2002). However, the cytogenetics of Chinese coreiods was poorly studied. To understand fully the karyotype evolution of Coreoidea, we studied the karyotype and meiotic behavior of the chromosomes in some representatives of Coreoidea from China.

Material and methods

The number and provenience of the male specimens studied in the present work are summarized in Table 1. All individuals were brought alive to the laboratory; their gonads were dissected out, and fixed in methanol: glacial acetic acid (3:1).

Slides were prepared by the squash-technique in acetic hematoxylin except a few in a drop of 45% acetic acid. The cover slip was removed by the dry ice method. Afterwards, fluorescent banding (DAPI fluorochromes) were applied to these slides to reveal different kinds of heterochromatin constitution.

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