

## A karyotype comparison between *Largus fasciatus* and *L. rufipennis* (Heteroptera, Insecta) by conventional, chromosome banding and rDNA-FISH

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### Abstract/Resumo

The most important economic impact of *Largus fasciatus* and *L. rufipennis* is the feeding effect on potato, carrot, tobacco, and bean crops in Argentine. Largidae have a low diploid chromosome number, a sex chromosome system of X0/XX (male/female), except to one species, and a pair of m chromosomes, excluding the genus *Largus*. Cytogenetic and heterochromatin characterization, and the analysis of the location of rDNA genes between both species were performed. They possess a same diploid number  $2n=12+X0/XX$  and very large chromosomes. The C-banding patterns showed discrete C-positive bands terminally located in all autosomes and the X chromosomes, which were observed in all stages of mitosis and meiosis. The main cytogenetic difference was detected in the location of the rDNA clusters. In *L. fasciatus* the hybridization signals were located at subterminal position in an autosomal bivalent, whereas in *L. rufipennis* a cluster of rDNA genes was located at one end of the X chromosome. As a result, the rDNA clusters are very useful tools for the study of the karyotype structure and chromosome evolution in groups with holokinetic chromosomes due to it can contribute to understand the karyotype evolution and taxonomic relationships among several taxa. On the other hand, the absence of m chromosomes and the presence of sex chromosome system X0 in species of Larginae could be considered as derived characters, which arose during karyotype evolution. We suggest that within this subfamily, the m chromosome pair could have lost its particular meiotic behaviour and became a regular autosomal pair, or fused to an autosomal pair, contributing thus to the increase in the chromosome size and, also, to the decrease in the chromosome number of the species. Therefore, chromosome studies are of great importance for understanding the evolutionary history of different insects groups because the data obtained, together with existing for other species, showed that different chromosome changes are involved in the evolution of the several species in the same family and even in Heteroptera.

Keyword/Palavras-chave: C-banding; FISH; holokinetic chromosomes; karyotype comparison

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