

Bimodal chromosomal structure, evidenced by repetitive sequences distribution, is conserved in species of the genus *Eleutherine* Herb. (Iridaceae)

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Abstract/Resumo

Bimodal karyotypes are characterized by the presence of two sets of chromosomes of contrasting size. In animals, proportions of genes and repetitive sequences, heterochromatin and euchromatin distribution and the replication time differentiate both chromosome sets. Plant bimodal karyotypes are less studied but large chromosomes usually present more heterochromatin and repetitive sequences. *Eleutherine bulbosa* (Mill.) Urb. ($2n = 12$), one of the two species of *Eleutherine*, possesses one large chromosome pair highly enriched in repetitive sequences, while in small chromosomes these sequences are mostly restricted to the pericentromeric regions. This large chromosome pair has a pericentric inversion comprising 70% of the chromosome in permanent heterozygosis, resulting in an acrocentric and a metacentric chromosome that show suppressed meiotic recombination in the inverted region. The aim of this study was to investigate if this different repetitive distribution between chromosome sets is maintained in other bimodal karyotypes. Four repetitive sequences, abundant in the *E. bulbosa* genome (two satellite DNAs and two LTR-retrotransposons), as well as the 5S and 35S rDNA, were mapped by fluorescence in situ hybridization in the sister species, *E. latifolia* (Standl. & L.O. Williams) Ravenna ($2n = 12$), with an acrocentric large chromosome pair. All repetitive sequences had the same chromosomal distribution in both species. Both rDNA sites were localized in the large chromosome pair in *E. latifolia*: the 35S rDNA site at the pericentromeric region and the 5S rDNA sites duplicated on the long arm at distal position. Eb1 satDNA was restricted to the long arms of the large chromosome pair with two strong signals. The Eb2 satDNA was distributed in all chromosomes of the complement in the centromeric region. Both LTR-retrotransposons, Ty3/Gypsy-Tat and Ty1/Copia-Maximus, were enriched in the large chromosome pair, with a uniform distribution along chromosome arms. Small chromosomes showed a pericentromeric distribution for Ty3/Gypsy-Tat retrotransposon. In contrast, Ty1/Copia-Maximus revealed a dispersed distribution, but enriched at pericentromeric regions. These data revealed that all repeats are conserved in both species and the differential chromosome distribution between chromosome sets is maintained and appears to be related to the bimodal condition.

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