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Karyotype heterogeneity in *Philodendron* s.l. (Araceae) revealed by chromosome mapping of rDNA loci

Emanuelle Varão Vasconcelos¹, Santelmo Vasconcelos², Tiago Ribeiro^{3 4}, Ana Maria Benko-Iseppon¹, Ana Christina Brasileiro-Vidal¹

Affiliations

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Abstract

Philodendron s.l. (Araceae) has been recently focus of taxonomic and phylogenetic studies, but karyotypic data are limited to chromosome numbers and a few published genome sizes. In this work, karyotypes of 34 species of *Philodendron* s.l. (29 species of *Philodendron* and five of *Thaumatococcus*), ranging from $2n = 28$ to 36 chromosomes, were analyzed by fluorescence in situ hybridization (FISH) with rDNA and telomeric probes, aiming to understand the evolution of the karyotype diversity of the group. *Philodendron* presented a high number variation of 5S rDNA, ranging from two to 16 sites, which were mostly in the terminal region of the short arms, with nine species presenting heteromorphisms. In the case of *Thaumatococcus* species, we observed a considerably lower variation, which ranged from two to four terminal sites. The distribution of the 5S rDNA clusters was more conserved, with two sites for most species, being preferably located interstitially in the long chromosome arms. For the telomeric probe, while exclusively terminal sites were observed for *P. giganteum* ($2n = 30$) chromosomes, *P. callosum* ($2n = 28$) presented an interstitial distribution associated with satellite DNA. rDNA sites of the analyzed species of *Philodendron* s.l. species were randomly distributed considering the phylogenetic context, probably due to rapid evolution and great diversity of these genomes. The observed heteromorphisms suggest the accumulation of repetitive DNA in the genomes of some species and the occurrence of chromosomal rearrangements along the karyotype evolution of the group.

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Figures

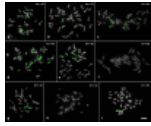


Fig 1. Fluorescent *in situ* hybridization of...

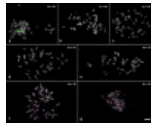


Fig 2. Distribution of repetitive sequences in...



Fig 3. Chromosomal patterns for rDNA in...

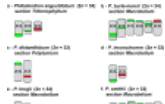


Fig 4. Chromosomes mapped with 35S (green)...

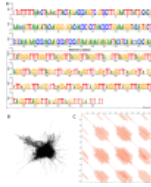


Fig 5. Features of the satellite DNA...

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