

Cytogenetic characterization and DNA content of *Zygopetalum* species (Orchidaceae) from Ibitipoca State Park, MG.

Gomes, S.S.L.; Campos, V.R.; Lima, A.K.; Neves, C.S.; Matos, E.M.; Cabral, E.G.; Viccini, L.F.

Abstract/Resumo

Orchidaceae is one of the most representative family of flowering plants. Brazil is considered the diversity center of the genus with more than 2,350 species. The association of phenotypic diversity, wide area of occurrence and unresolved taxonomic issues, makes the family an excellent model to study the dynamic of plant populations. The genus *Zygopetalum* was used as a model for investigating the evolutionary processes and the origin of diversity in tropical plants. The karyotype, DNA content and meiotic behavior of *Z. mackayi* and *Z. triste* from the Ibitipoca State Park (PEI), Minas Gerais, Brazil, were investigated. Apparently, the geographical distribution of different patterns of flower shapes and colors follow the species distribution within the Park, suggesting the occurrence of a particular flower pigmentation for each species. The main question involve the genetic base of individuals with intermediate flower characters. For DNA content estimation, fresh leaves of each sample and the reference standard (*Vicia faba*) were macerated in LB01 buffer and stained with propidium iodide. The analysis was carried out in a FACSCanto™II flow cytometer and the histograms were analyzed using Flowing Software 2.0. Root tips were pretreated with 8-hydroxyquinoline (2mM) for 24h at 4°C and then fixed in Carnoy. The slides were prepared by cell dissociation after enzymatic maceration. Some slides were assigned to the FISH technique using 5S and 45S rDNA probes. For meiotic analysis, the slides were prepared by squash technique using flower buds. The mean of DNA content revealed only one ploidy level in the population, with 14.05 pg of DNA, and only one chromosome number ($2n = 96$). FISH technique showed no difference in the distribution pattern of rDNA sites among the individuals. Four 5S and 45S sites were observed at subterminal and terminal position, respectively. All individuals showed meiotic alterations. The most frequent abnormalities observed were delayed or lost chromosomes, unequal chromosome segregation and chromosome bridge. Taking all data in account, it seems that *Zygopetalum* individuals from PEI belongs to the same population, hinder the association between the phenotypic plasticity and the genetic variation at the chromosome level and DNA content.

APOIO FINANCEIRO: Fapemig, Capes, CNPq

Keyword/Palavras-chave: Tropical orchid; Flow cytometry; Meiosis; FISH; rDNA 5S-45S