

Karyomorphological studies of six species of subtribe Catasetinae, Orchidaceae

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Abstract

The karyomorphological observations were carried out on six species in three genera (*Catasetum*, *Cycnoches* and *Mormodes*) of subtribe Catasetinae, Orchidaceae cultivated in the Hiroshima Botanical Garden.

In the all six species, the nuclei at resting stage were observed as the complex chromocenter type, and the karyotypes at mitotic prophase were observed as the interstitial type.

The chromosome numbers of *Catasetum tenebrosum* ($2n=54$) and *Mormodes sinuata* ($2n=54$) were reported here for the first time, and *Catasetum cernuum* ($2n=54$), *C. integerrinum* ($2n=54$), *C. viridiflavum* ($2n=54$) and *Cycnoches ventricosum* ($2n=68$) were redocumented. It was suggested that the five species with chromosome number of $2n=54$ had basic chromosome number of $x=27$ and the one species with chromosome number of $2n=68$ had basic chromosome number of $x=34$.

The karyotypes at mitotic metaphase were symmetrical due to the centromeric position on the all six species studied. The karyotypes of four species of *Catasetum* and *Cycnoches ventricosum* were gradual, though that of *Mormodes sinuata* was bimodal due to the chromosome length.

Introduction

The subtribe Catasetinae, tribe Cymbidieae, the Orchidaceae consists of 194 species in five genera (*Catasetum*, *Clowesia*, *Cycnoches*, *Dressleria* and *Mormodes*) in which the most species are distributed in tropical America (Dressler 1993).

The chromosome numbers of 30 species in the subtribe Catasetinae were indicated as $2n=54$, 56, 64, 68, ca.108 and ca.162 (Blumenschein 1960, Jones and Daker 1967, Nakata and Hashimoto 1990, Félix and Guerra 2000).

The authors have already studied about the chromosomes of tribe Cymbidieae (Aoyama 1989). In this study, karyomorphological observations of six species of subtribe Catasetinae cultivated in the Hiroshima Botanical Garden were held for enhancing the information about chromosomes.

Materials and Methods

The six species observed in this study were listed in Table 1. They were in three genera in the subtribe Catasetinae and cultivated in the Hiroshima Botanical Garden.

The observation of chromosomes was made by the aceto-orcein squash method. The active root tips were immersed in 0.002M 8-hydroxyquinoline at 15°C for four hours. Then, they were fixed in acetic alcohol (1:3) at 5°C for 24 hours. The fixed materials were hydrolyzed in a 1:2 mixture of 45% acetic acid and 1N HCl at 60°C for 30 seconds. Finally, the materials were squashed and stained in 2% aceto-orcein.

The observations on chromosome morphology were made in nuclei at resting stage, and chromosomes at mitotic prophase and metaphase stages. The types of nuclei at resting stage and chromosomes at mitotic prophase were classified according to Tanaka (1971, 1980), and at mitotic metaphase, they were classified according to Levan *et al.*

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