

THE CHROMOSOME NUMBERS OF 5 SPECIES IN GENTIANACEAE*

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Abstract

Reported in the present paper are the chromosome numbers of 5 species in Gentianaceae. The results are as follows: *Gentianopsis paludosa* $2n=26$ and $n=13$; *Gentianella gentianoides* $2n=22$; *Gentianella azurea* $2n=22$; *Lomatogonium rotatum* $2n=16$; *Lomatogonium carinthiacum* $2n=18$. In addition, the systematic significance of the chromosome numbers is also discussed

Key words: Chromosome numbers; Gentianaceae

Chromosome data, especially chromosome numbers, play an important role in resolving the problems of plant systematics and evolution (Stebbins, 1971; Hong, 1990). Although a lot of observations on the chromosome numbers of Gentianaceae (e. g. Shigenobu Y, 1984, Yuan & Kupfer 1993, Kupfer & Yuan 1996; Ho et al., 1997) have been made, the chromosome data in this family are still incomplete. The present paper reported the chromosome numbers of five species and discussed their systematic significance.

Materials and Methods

The species examined and their origins are listed in Table 1. The voucher specimens are preserved in the herbarium of Northwest Plateau Institute of Biology, the Chinese Academy of Sciences, The People's Republic of China (HNWP). The procedure in the present paper was as same as our former reports (Liu 1996; Ho et al., 1997). At least 20 cells were counted.

Result and Discussion

Five species examined here belong to *Gentianopsis*, *Gentianella* and *Lomatogonium*. The results are shown in Table 1. The chromosomes of the species investigated are illustrated in Plate I: 1~6.

In *Gentianopsis*, *G. paludosa* var. *paludosa* was revealed to be diploid with $2n=26$ and $n=13$. The result is congruent with that reported by Yuan & Kupfer (1993). Love (1953) and Love & Love (1975) had suggested the basic number $X=11$ for the genus *Gentianopsis*, but Yuan & Kupfer (1993) proposed the basic number of this genus should be $X=13$ rather than $X=11$ based on their extensive observation on more

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species. We agree with Yuan & Kupfer (1993) that the basic number of the genus is $X = 13$. In the *Gentianinae*, *Gentianopsis* might be closely related to *Pterygocalyx* because both genera further share same basic chromosome number of $X = 13$ besides their similar gross morphology (Chen et al., 1998). ITS phylogeny also indicates its close relationship with *Pterygocalyx* (Yuan & Kupfer, 1995).

Both *Gentianella gentianoides* and *G. azurea* were found to have $2n = 22$. The chromosome numbers for both species are reported here for the first time. The chromosome numbers available for *Gentianella* are tetraploid ($2n = 36$) or occasionally diploid ($2n = 18$) with the basic number $X = 9$ (Love, 1953; Love & Love, 1975; Krogulevich, 1978. Yuan & Kupfer, 1978). The number $X = 11$ is recorded here for this genus for the first time. Its relationship to the number $X = 9$ is still far from clear.

In *Lomatogonium*, *L. rotatum* was counted as $2n = 16$. The result is as same as that reported by Yuan & Kupfer (1993). A different number, $2n = 18$, was recorded for *L. carinthiacum*, which had previously been reported to have $2n = 40$ chromosomes (Krogulevich, 1978). Love (1953) suggested the basic chromosome number of *Lomatogonium* is $X = 5$; however, Yuan & Kupfer thought the basic number of the genus is $X = 8$ rather than $X = 5$. Our result found another chromosome number $X = 9$ for this genus. The basic chromosome number of this genus is still far from clear.

Table 1 Chromosome numbers and origins of taxa examined in the present study

Taxon	Chrom. No.	Locality	Voucher Specimen
<i>Gentianopsis paludosa</i>			
var. <i>paludosa</i> ,	$2n = 26$	Yuzhong, Gansu, Alt. 2400m	Liu Jianquan 001
	$n = 13$	Menyuan, Qinghai, Alt. 3200m	Liu Jianquan 92002
<i>Gentianella gentianoides</i>	$2n = 22$	Lijiang, Yunnan, Alt. 2900m	Liu Jianquan 219
<i>G. azurea</i>	$2n = 22$	Dari, Qinghai, Alt. 4200m	HBG 1312
<i>Lomatogonium rotatum</i>	$2n = 16$	Qinghai	Collected seeds
<i>L. carinthiacum</i> .	$2n = 18$	Qinghai	Collected seeds

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五种龙胆科植物的染色体数目

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摘 要

本文报道了龙胆科 5 种植物的染色体数目。结果如下: 湿生扁蕾 $2n=26$ 和 $n=13$; 密花假龙胆 $2n=22$; 黑边假龙胆 $2n=22$; 辐状肋柱花 $2n=16$; 肋柱花 $2n=18$ 。此外, 还讨论了这些染色体数目的系统学意义。

关键词: 染色体数目; 龙胆科



1~2. *Gentianopsis paludosa* var. *paludosa*, 1. $2n=26$ (Liu Jianquan 001); 2. $n=13$ (Liu 92002); 3. *Gentianella gentianoides*, $2n=22$; 4. *G. azurea*, $2n=22$; 5. *Lomatogonium rotatum*, $2n=16$; 6. *L. carinthiacum* $2n=18$.