

On the karyology of Armenian representatives of the *Centaurea* subgenus *Centaurea* (*Asteraceae*)

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AGABAYAN M. V. et GOUKASIAN A. V. (1994): On the karyology of Armenian representatives of the *Centaurea* subgenus *Centaurea* (*Asteraceae*). - *Thaiszia - J. Bot.*, Košice, 4:171-173. - ISSN 1210-0420.

ABSTRACT: Three representatives of *Centaurea* subg. *Centaurea* from Armenia have been studied: *C. ruthenica*, *C. hajastana*, *C. tamanianae*. The chromosome number $2n=30$ is reported for the three species. Chromosome numbers are given for the first time for two of them.

KEYWORDS: *Centaurea* subg *Centaurea*, Karyology, Armenia.

Introduction

The genus *Centaurea* L. is one of the taxonomically by most difficult genera. Moreover, its cytology has not been studied satisfactorily. From the point of view of karyology, it is a very heterogenous object, exhibiting the basic numbers $x=7, 8, 9, 10, 12, 13, 15$ (GUINOCHET 1957, FERNANDES et QUEIROS 1971). Nevertheless, the subgenus *Centaurea* represents a markedly less heterogenous group. For all the representatives of the subgenus studied collected from different parts of its geographical range, $2n=30$ is recognized.

The basic number of $x=15$ was obtained for the first time for the most widespread and polymorphic species *C. ruthenica* by PODDUBNAIA-ARNOLDI (1931).

Later on GUINOCHET (1957), when investigating genus *Centaurea* L. s.l., gave basic number for each taxonomic group. These data have been correlated in this paper with palynological data obtained by WAGENITZ (1955). A single number of $x=15$ is given for the *Centaureium* group (subgenus *Centaurea*) by GUINOCHET with reference to PODDUBNAIA-ARNOLDI (1931).

Among the papers on the karyology of the subgenus *Centaurea* the publications by TONIAN (1968a, 1968b, 1971) should especially be mentioned. She studied a number of the Armenian species of *Centaurea* and $2n=30$ for *C. ruthenica* LAM. agreed with previous data.

In 1971, an interesting paper by FERNANDES and QUEIROS (Portugal) appeared where the number $2n=30$ for *C. tagana* BROT. (syn. *C. africana* LAM.), the second most widespread species after *C. ruthenica*, was reported for the first time.

In 1976, VALDES-BERMEJO and GOMES GARSIA published $2n=30$ for *C. alpina* L. from Spain, and in 1981 SILJAK-JAKOVLEV confirmed the number $2n=30$ for the same species from Yugoslavia.

Material and method

Chromosome numbers were counted in root tips of plants obtained from seeds collected in the natural conditions of growth. Herbaria of the specimens studied is kept in the Institute of Botany of the Academy of Sciences of Armenia (ERE). The numbers cited in the text correspond to the numbers of the cytological collection.

Roots were pretreated with 0.2% colchicine for 2 hours, fixed in Battaglia (5:1:1:1) for 10 min (BATTAGLIA 1957). Then the material subjected to a cold hydrolysis in HCl solution (1:1) for 20 min.

Squashed permanent preparations were stained according to the Feulgen technique.

Results

We have studied the chromosome numbers of the subgenus *Centaurea*, which is represented in Armenia by 3 species: *C. ruthenica* LAM. (a widespread species) and two local endemic species - *C. hajastana* TZVEL. and *C. tamaniana* AGABABYAN.

1. *C. ruthenica* - $2n=30$, Armenia, Ararat region, the Urts mountain ridge, 1989, AGABABYAN, GABRIELIAN, DITTRICH, C-1882. The diploid number $2n=30$ is reported in literature. We confirm the given number. Metacentric chromosomes prevail in the set. There is a pair of chromosomes with a satellite. The karyotype is symmetric (Fig. 1a).

2. *C. tamaniana* - $2n=30$, Armenia, Akhurian region, Krashen village, mount Maral, the right side of Mahari-Dzor canyon, 1986, AGABABYAN, GABRIELIAN, C-1878; Eghegnadzor region, between Areni and Khachik villages, steppe-meadow, 1900 m, 13.07.1989, GABRIELIAN, DITTRICH, C-1883. The diploid chromosome number is reported for the first time. The karyotype is symmetric with predominant metacentric chromosomes. There is one pair of chromosomes with satellites (Fig. 1b).

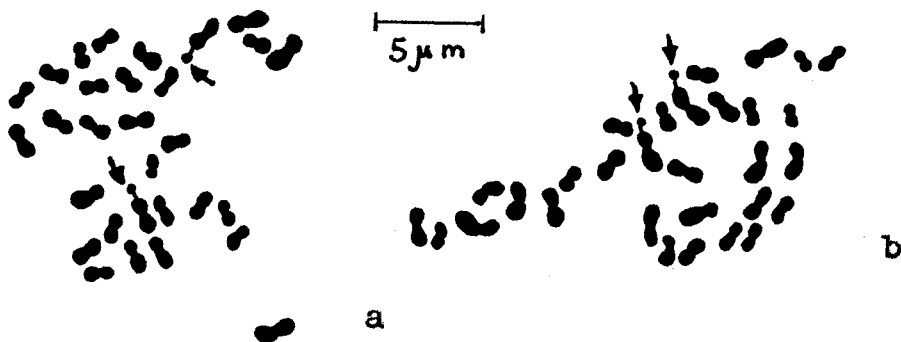


Fig. 1. a - *Centaurea ruthenica* LAM., $2n=30$; b - *Centaurea tamaniana* AGABABYAN, $2n=30$.

3. *C. hajastana* - $2n=30$, Armenia, Ani region, between Bagravan and Artic villages, a stony strip in the field, 1987, AGABABYAN, FAJVUSH, C-1880. The given species is investigated for the first time. The karyotype is symmetric, with metacentric chromosomes predominant.

Discussion

All the investigated species are characterized by a basic number of $x=15$. We treat the species as amphidiploids with a secondary basic number $x=15$, the origin of which might have possibly be accounted for by the crossing of the species with the basic ancestor numbers $x=7$ and $x=8$.

The karyological data as well as morphological and palynological ones reveal extreme homogeneity of the investigated subgenus of *Centaurea* (AGABABIAN, FAJVUSH 1991).

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Received: 13 July 1993

Accepted: 13 August 1993