

BAZI ASPHODELINE TÜRLERİNİN KROMOZOM SAYILARI
CHROMOSOME NUMBERS OF SOME ASPHODELINE SPECIES

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SUMMARY

Chromosome numbers have been counted for 5 species of *Asphodeline* (*Liliaceae*). *A. baytopae*, *A. brevicaulis* subsp. *brevicaulis* var. *brevicaulis*, *A. taurica*, *A. damascena* subsp. *damascena* and *A. prismatocarpa*. They all have 28 (2n) chromosomes. Other two species *A. lutea* and *A. liburnica* have also the same number of chromosomes as recorded previously. But *A. lutea* has also 14 and 56 chromosomes as an exception. Basic number (x) is 7 and it is a constant number in the *Asphodeline* species examined.

ÖZET

Bu çalışmamızda 5 *Asphodeline* (*Liliaceae*) türünün kromozom sayıları saptanmıştır. Bu türler *A. baytopae*, *A. brevicaulis* subsp. *brevicaulis* var. *brevicaulis*, *A. taurica*, *A. damascena* subsp. *damascena* ve *A. prismatocarpa* türleri olup hepsi için kromozom sayısı (2n) 28 bulunmuştur. *A. lutea* ve *A. liburnica* türlerinde de aynı kromozom sayısının olduğu daha önceki literatürde kaydedilmiştir. Ayrıca *A. lutea* ile yapılan çalışmalarda 14 ve 56 kromozom sayılarına da rastlanmıştır. *Asphodeline* cinsinde temel sayı (x) 7 dir ve incelenen türlerde değişiklik göstermez.

Keywords : *Asphodeline*, *Liliaceae*, chromosome number

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INTRODUCTION

The genus *Asphodeline* (Liliaceae) consists of 14 species mainly distributed in the Middle-East. All of its species have been recorded in Turkey and 5 of them are endemic species (1). Therefore the center of the distribution of the genus is also in Anatolia.

The chromosome counts in *Asphodeline* have been reported for only 3 species in the previous literature (2 - 5).

A. lutea (L.) Reichb.: $2n = 14, 28, 56$

A. liburnica (Scop.) Reichb.: $2n = 28$

A. taurica (Pallas) Kunth: $2n = 28$

In our studies, the chromosome numbers in the various species of *Asphodeline* were investigated. The results so far obtained are presented in this paper.

MATERIAL and METHOD

The chromosomes were counted in the root-tips which were germinated from the seeds. All the seeds were provided from the wild plants. Their voucher specimens were collected from Turkey and they are kept in the Herbarium of the Faculty of Pharmacy, University of Istanbul (ISTE). The localities of the examined specimens are as follows:

A. baytopae E. Tuzlacı – C 5/6 Hatay: SW of Kel Da. (Akra Da.), 1400 m., 27.V.1977, E. Tuzlacı, ISTE 37201.

A. brevicaulis (Bertol.) J. Gay ex Baker subsp. **brevicaulis** var. **brevicaulis** – C 2 Muğla: between Köyceğiz and Dalyan, Kavakarası köyü, 20 m., 21.VI.1980, E. Tuzlacı, ISTE 44906.

A. taurica (Pallas) Kunth – C 4 Konya: 17 km from Ermenek to Karaman, Teke Çatı, 1450 m., 28.VI.1980, E. Tuzlacı, ISTE 45181.

A. damascena (Boiss.) Baker subsp. **damascena** – A 3 Ankara: between Beypazarı and Nallıhan, near Çayırhan, 550 m., 21.VII.1980, E. Tuzlacı, ISTE 45555.

A. prismatocarpa J. Gay ex Baker – C 5 Niğde – Çamardı, Mazmılı

Da., above Dağdibi (Solaklı) köyü, 1900 m., 8.VIII.1980, E. Tuzlacı, ISTE 45746.

Germination of the seeds by their own is very difficult in laboratory conditions since they have hard testa. In order to facilitate it, the sharp point of the seed is cut without damaging the radicle. Then the seeds are put into the water. They are left at the room temperature until the roots elongate at least 3-4 mm.

The following procedure has been adopted from the method used in the cytological studies of *Allium* species (6). Root tips were pretreated in saturated alphabromonaphtalene (ABN) for 24 hours in a refrigerator. They were fixed in acetic alcohol (1 part glacial acetic acid: 3 parts absolute alcohol). The roots were then stained using the standart Feulgen technique and root-tip squashes were prepared. Permanent slides were made by the liquid CO₂ method.

RESULTS

In this study, the chromosome numbers of 5 species of *Asphodeline* were counted and except *A. taurica* the others are recorded for the first time. These are listed in Table-I together with previous counts.

According to this table, chromosome numbers are determined as 28 (2n) for each species of *Asphodeline* examined, except *A. lutea* which has also 14 (2n) and 56 (2n) chromosomes.

Basic number (x) is 7 and that number is not different in the white and yellow-flowered species and in the perennial and biennial species of the genus (Table-II).

The chromosomes of *Asphodeline* are small and are often difficult to examine satisfactorily. For this reason, chromosome morphology is excluded in this paper. However, two photographs (Photo. 1, 2) were added to the text for the presentation of the chromosomes.

Table I.

Species	Herbarium Specimen Number	Mitotic Count (Root tip) 2n	Previous Counts 2n	Reference
<i>A. lutea</i> (L.) Reichb.			14 28 28 28 28	Suessenguth 1921 a Prozina 1936 Satô D. 1942 Delay 1947 La Cour 1952 (D. 1955)
<i>A. baytopae</i> E. Tuzlacı	ISTE 37201	28		Mitra K. 1964
<i>A. brevicaulis</i> (Bertol.) J. Gay ex Baker subsp. <i>brevicaulis</i> var. <i>brevicaulis</i>	ISTE 44906	28		Corrias, Garbari, Marchi 1976, 1978
<i>A. liburnica</i> (Scop.) Reichb.			28	Prozina 1936
			28	Corrias, Garbari, Marchi 1979
			28	Van Loon and Kieft 1980
<i>A. taurica</i> (Pallas) Kunth	ISTE 45181	28	28	Prozina 1936
<i>A. damascena</i> (Boiss.) Baker subsp. <i>damascena</i>	ISTE 45555	28		
<i>A. prismatocarpa</i> J. Gay ex Baker	ISTE 45746	28		

Table II

	Perennial	Biennial
Yellow-flowered	<i>A. lutea</i> <i>A. baytopae</i> <i>A. brevicaulis</i> <i>A. liburnica</i>	—
White-flowered	<i>A. taurica</i>	<i>A. damascena</i> <i>A. prismatocarpa</i>

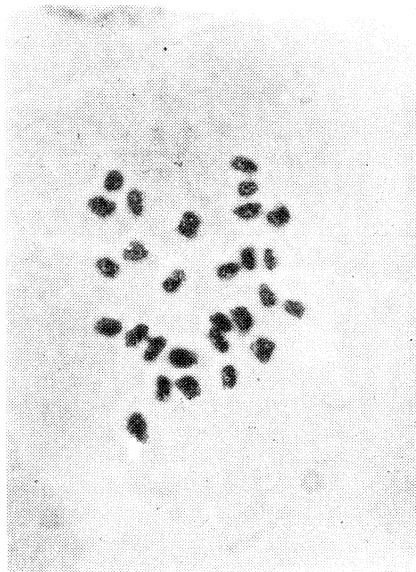
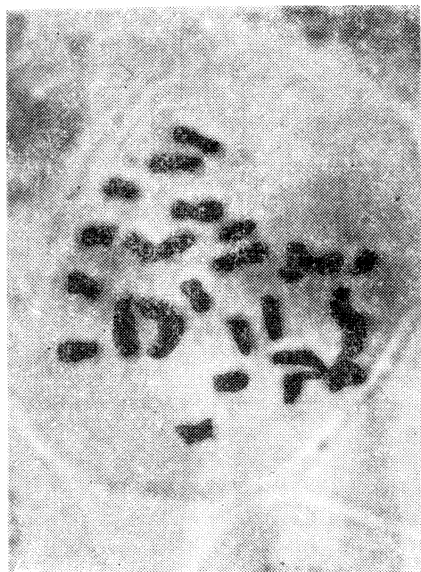


Photo. 1. Chromosomes of *Asphodeline brevicaulis* ($\times 10000$).

Photo 2. Chromosomes of *Asphodeline damascena* subsp. *damascena* ($\times 10000$).

REFERENCES

1. Mathews, V.A., Tuzlaci, E.: *The genus Asphodeline*, in Davis «*Flora of Turkey and the East Aegean Islands*.» Vol. VIII. University Press, Edinburg, 1984, p. 77-88.
2. Darlington, C.D., Wylie, A.P.: *Chromosome Atlas of Flowering Plants*. ed. 2. London, 1955, p. 364.
3. Fedorov, A.: *Chromosome numbers of Flowering Plants*. Leningrad, 1966, p. 384, 385.
4. Löve, A.: *Taxon*, 29 (4), 538 (1980).
5. Corrias, S.D., Garbari, F., Marchi, P.: *Inform. Bot. Ital.*, 16, 223 (1984).
6. Özhatay, N.: *J. Fac. Pharm. Istanbul*, 19, 26 (1983).

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