CHROMOSOME NUMBERS OF SOME ARTEMISIA L. SPECIES FROM IRAN

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Chromosome counts are obtained referring to 12 species of *Artemisia.* Chromosome numbers for five species are reported for the first time. Two counts are new numbers for two already cytologically examined species.

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اعداد کروموزومی برخی از گونه‌های جنس درمنه *Artemisia* از ایران

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اعداد کروموزومی ۱۲ گونه از جنس درمنه *Artemisia* از ایران معرفی می‌گردند که از میان آنها اعداد کروموزومی ۵ گونه برای اولین بار گزارش می‌شوند. دو شمارش جدید برای دو گونه که قبلا از نظر سیتولوژیکی مطالعه شده‌بودند، ارائه می‌گردد.

INTRODUCTION

The genus *Artemisia* is widely distributed in Iran. Altogether 33 species have been reported from the country which many of them show morphological variation. A cytotaxonomic study was planned to be done on the genus, to help the identification of the species. In this work 12 species were examined and 17 chromosome counts are obtained.

MATERIALS AND METHODS

Seeds of *Artemisia* species were collected from herbarium specimens and plants growing in wild. The floret buds were collected from wild plants. For mitotic observation, root tips from seedlings germinated in petri dishes were pretreated with 0.002 mole aques 8 hydroxy quinoline solution, fixed in 1:3 acetic alcohol for 24 hours, transffered to 70% ethyl alcohol and stored at 4°C. The root tips were stained in acetocarmine. For meiotic study the floret buds of appropriate size were treated in the same way as the root tips, excluding pretreatment. Anthers were removed and stained in acetocarmine.

Voucher specimens are deposited at the herbarium of Research Institute of Forests and Rangelands (TARI).

RESULTS AND DISCUSSIONS

Chromosome numbers were determined for 17 accessions representing 12 species of *Artemisia* (Table 1, Fig 1). Chromosome counts for five *Artemisia* species are reported for the first time. These species are as follows:

A. aucheri with 2n=18, *A. deserti* with 2n=18, *A. diffusa* with 2n=36, *A. gypsacea* with 2n=54 and *A. santolina* with 2n=54.

New Chromosome numbers differing from the numbers previously reported, are obtained for two species. These new counts are 2n=54 for *A. austriaca* and 2n=18 for *A. incana*. The previous counts for *A. austriaca* are 2n=16 (Sklinska *et al.*, 1959; Kuzmanov *et al.*, 1986) and 2n=36 (Kawatani & Ohno, 1964). Previous count for *A. incana* is n=6 (Kawatani & Ohno 1964). Chromosome counts for the following five species: *A.absinthium,* (2n=18), *A. annua* (2n=18), *A. chamaemelifolia* (n=9), *A. scoparia* (2n=16) and *A.vulgaris* (2n=16) confirmed the previously published counts for these species (Table 1).

Meiosis was normal in *A. annua* and *A. chamaemelifolia* with 9 bivalents at diakinesis of both species (Fig. 1.A).

table 1. Chromosome Numbers of Artemisia L. Species

No.	Name of species	chromosome no. n	chromosome no. 2n	locality & Herbarium no.	Previous records +
1	A.absinthium L.		18	Mzandaran, 15-46km from Azadshahr to Shahroud No. 59622	2n=18, Kawatani & Ohno (1964); 2n=18, n=9, Susuka (1950); 2n=18, Polya (1949); 2n=18, Kaul and Bakshi (1984); 2n=18, Medelak and Schwizer (1986); 2n=18, Verlaque *et al.* (1987)
2	A.annue L.		18	Mazandaran, Ramsar, Neydasht, No. 6334	2n=18, Polya (1949); 2n=18, n=9, Susuka (1950); 2n=18, Masumori (1972)
		9	18	Khorassan, Ashkhaneh No. 59667	
		9	18	Gilan, Hashtpar, Karkan river bed. No. 59481	
			18	Mazandaran, Minudasht No. 59645	
			18	Esfahan, Near Soffeh Mountain	
3	A.* aucheri Boiss.		18	Semnan, Damghan, Cheshme-Ali No. 59539	No previous record
4	A. austriaca Jacq.		54$^{\Delta}$	Azarbayejan. 5km. from Ardabil to Astara No. 61642	2n=16, Skalinska *et al.* (1959); 2n=36, Kawatani & Ohno (1964); 2n=16, Kuzmanov *et al*(1986)
5	A. chamaemelifolia	9		Mazandaran. Chalus valley.	2n=18, Kawatani & Ohno (1964)

(Cont.....Table 1)

5	A. ch. Vill.			N. side of Kandavan Tunnel No. 43128	
6	A.* deserti Krasch.		18	Baluchestan, Kuh-e Taftan, Tamandan valley, No. 58760	No Previous record
7	A.* diffusa Krasch. ex Poljak		36	Semnan, ca. 20 km. from Shahroud to Azadshahr	No previous record
8	A.* gypsacea Krash. M. pop & Lincz. ex Poljak		54	Semnan, Shahrud, 85 km. from Azadshahr to Shahroud No. 67956	No. previous record
9	A. incana(L.)Druce		18$^{\Delta}$	Azarbayjan, Zanjan, 52km. from Zanjan to Bijar No. 59471	n=6(?), Kawatani & Ohno (1964)
10	A.* santolina Schrenk		54 54	Baluchestan, Kuh-e Taftan, Tamandan valley, No. 58757 Baluchestan, 40 km. from Iranshahr to Khash, Dasht-e Abkhan No. 58761	No previous record
11	A. scoparia Waldst. & Kit		16	Azarbayjan, side of Urmieh Lake, Tasuj	2n=36, 16, Kawatani & Ohno (1964); 2n=16, Schweizer and Ehrendorfer (1983); 2n=16, Kaul and Bakshi (1984) 2n=16, Mendelak & Schweizer (1986); 2n=16, Kuzmanov *et al* (1986)

(Cont.....Table 1)

12	A. vulgaris L.		16	Azarbayjan, East of Kaleibar No. 64289	2n=18, 36, 54, Clausen et al (1938); 2n=16, Polya (1949); 2n=16, Kawatani & Ohno; 2n=16, 18, Kaul and Bakshi (1984); n= 8, Mulligan (1984); 2n=16, Kuzmanov *et al* (1986); 2n=18, Gupta & Gary (1987)

+) Where there has been many previous reports of the same chromosome number for the species, only some of them are included in the table.

*) Chromosome number for these species are reported for the first time.

Δ) New Chromosome counts for the species previously examined karyologically.

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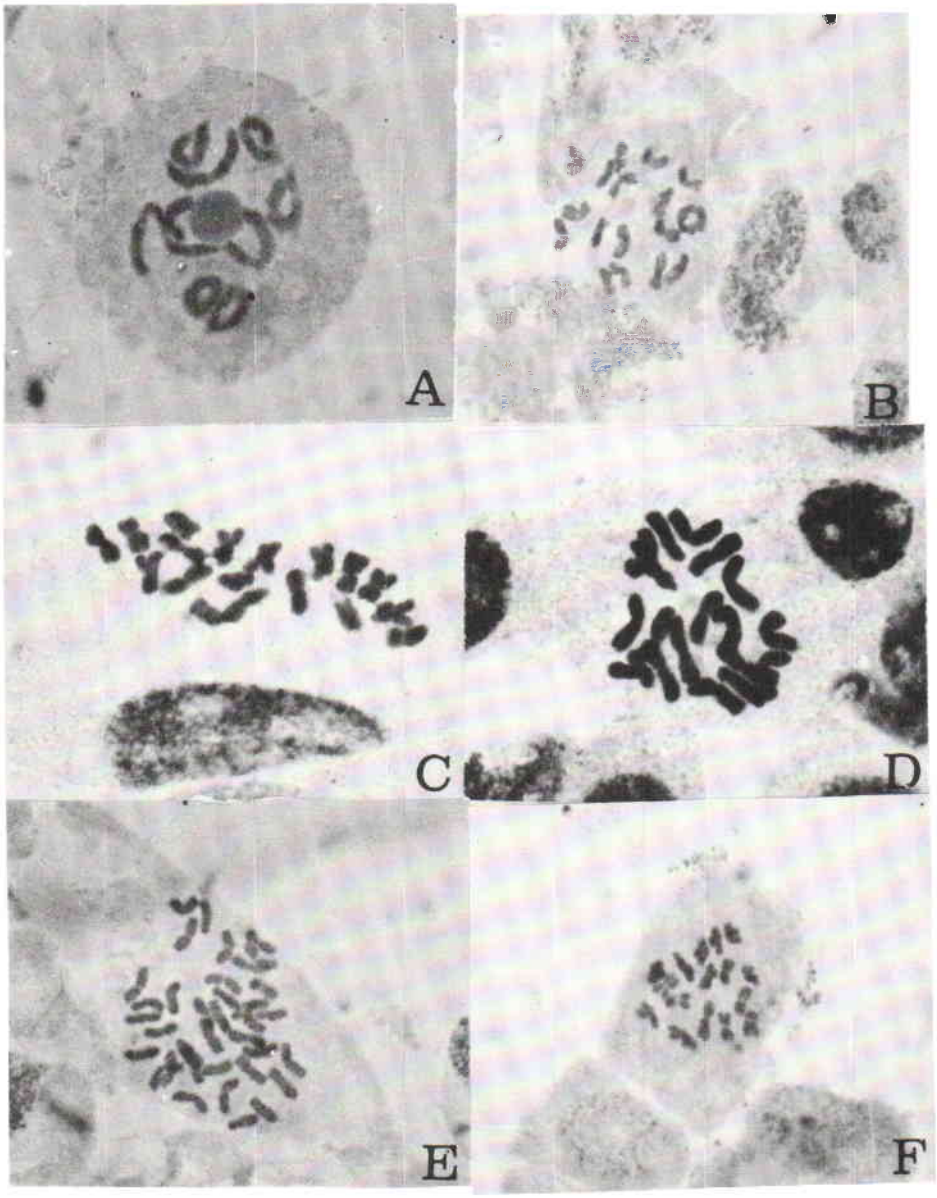

Fig. 1. Photomicrographs of Chromosomes of five Artemisia species. A, *A. annua* n=9 (Diakinesis). B-E, Metaphase Chromosomes of 8-hydroxy quinoline treated root tip cells of: B, *A. annua*; C, *A. absinthium*; D, *A. deserti*; E, *A. diffusa*; F, *A. scoparia* (x1250)