

CHROMOSOME COUNTS FOR FIVE SPECIES OF MORACEAE FROM IRAN

D. Azizian & A. Sonboli

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Chromosome counts are given for 5 species of *Moraceae* belonging to 2 genera (*Morus* and *Ficus*) from Iran. Chromosome numbers (2n) for *F. johannis* and *F. rupestris* are reported for the first time. The collections cover the entire range of family from Iran.

Dina Azizian and Ali Sonboli, Department of Biology, Faculty of science, Shahid Beheshti University, Evin, Tehran, Iran.

Key words. *Moraceae*, Chromosome, Iran.

شمارش کروموزومی تیره توت (*Moraceae*) در ایران

دینا عزیزیان و علی سنبلی

شمارش کروموزومی ۶ گونه از دو جنس توت (*Morus*) و انجیر (*Ficus*) از تیره توت ارائه شده است. برای بعضی از این گونه ها عدد کروموزومی منتشر نشده بود. این مجموعه شامل تمام گونه های موجود در ایران از شمال تا جنوب می باشد.

INTRODUCTION

Moraceae is mainly tropical and subtropical family with about 38 genera and more than 1200 species. The family is a highly complex group morphologically and with a wide range of chromosome number ($2n=24, 26, 28, 42, 56, 84, 304$) (Goldblatt 1981-1994).

From 4 genera cited in the Flora Iranica (Browicz 1982), only 2 genera, *Morus* and *Ficus* with 5 species have been recorded from Iran. Although there has been several studies on cytology of the various genera in the other countries (Bir & al. 1984a, Ohri & Khoshoo 1987, Basavaiah & al. 1990), there has been no report on chromosome numbers of *Morus* and *Ficus* species in Iran. The present work is a survey of a collection of *Moraceae* from Iran and the chromosome counts for some of them are reported for the first time.

MATERIALS AND METHODS

Chromosome counts were based on seeds and flower buds which were collected from natural habitat in different parts of Iran. For mitotic observation, young actively growing root-tips were pretreated in 0.02 M 8-hydroxyquinoline at room temperature for 2-4 hours, and fixed in ethanol/acetic acid (3:1) for 24 hrs, stained and squashed in acetocarmine. For meiotic study the flower buds were fixed in ethanol/acetic acid (3:1) in the field, anthers were squashed and stained with 2% acetocarmine. (Sharma & Sharma 1990) Photographs were taken on an Olympus Photomicroscope at initial magnification of $\times 1000$.

OBSERVATION AND DISCUSSION

Chromosome numbers were determined for 2 species of *Morus* and 3 species of *Ficus*. The chromosomes were small in size, as expected, because woody plants are known to possess small sized chromosomes (Mehra 1976, and Rico Arce 1992). There were no difference in ploidy level between 3 species of *Ficus*

($2x=2n$). But there were some differences in gametophytic chromosome numbers, ploidy level and chromosome behavior in meiosis between 2 *Morus* species studied.

***Morus alba* L.;** $n=14$; Figs. 3-5.

Locality: Tehran: Evin, University campus, 1700 m. Azizian & Sonboli 9910-DA.

This species was originally native to china and at present is almost widespread and naturalised in Iran.

Cytological results ($n=14$) confirm the previous counts of Bir & al. (1984) and Dwivedi & al. (1989). Meiosis in this species was shown to be regular forming fourteen bivalents at diakinesis/metaphase I. In metaphase I showed a range of 4-12 ring bivalents and a range of 2-10 rod bivalents. Anaphase disjunction and telophase was regular.

***Morus nigra* L.;** $n=c.154$; Fig. 2.

Locality: Tehran: Velenjak, 1700 m. Sonboli & Azizian 9906-DA.

This species is a native of W. Asia and cultivated in many countries for its edible fruits.

This species occupies a unique position amongst flowering plants in exhibiting decaploidy ($22x$) with chromosome number $n=c. 154$ (Basavaiah & al. 1990). The results of chromosome behavior showed that the rod bivalents were more frequent than the ring bivalents, uni- and multivalents.

***Ficus carica* L.;** $2n= 26$; Fig. 3.

Locality: Tehran: 25 km. NW of Karaj, Mohammadi 9602-DA.

This species is a native of SW Asia and extensively cultivated. Previous report for this species was $n=13, 2n=26$ (Sanjappav & Dasgupta 1981) which agree with the present chromosome count in mitosis $2n=26$.

Ficus Johannis Boiss.; 2n=26; Fig. 4.

Locality: Esfahan: Najafabad, Siah-kuh- 1900-2000 m. Uoosofi 1162.

This species has a distribution in Iran, Afghanistan and Pakistan. Chromosome number is reported for this species for the first time.

Ficus rupestris (Hausskn. ex Boiss.) Azizian.; 2n=26; Fig. 5.

Locality: Kermanshah: 20 km N. of Bisotun, 2200 m. Azizian, Jalilian and Nemati 9905-DA.

This speceis has a distribution in Iran and Turkey. It has 26 chromosomes in mitosis and this is the first chromosome number report for it.

There is agreement that the great majority of *Ficus* species are diploid 2n=26 (Fedorov 1974). which confirm the results of our observations.

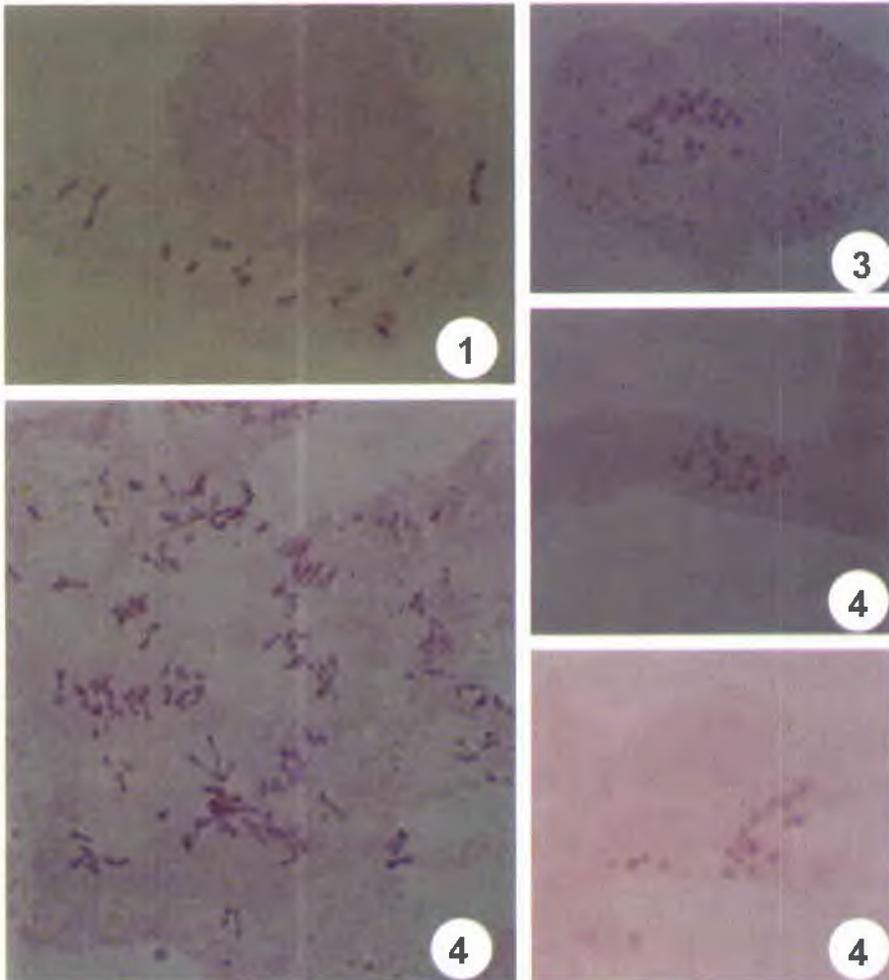
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Figs. 1-2 Meiotic chromosome behavior. – 1: *Morus alba*, metaphase I, $n=c.14$. – 2: *M. nigra*, metaphase I, $n=c. 154$. –Figs. 3-5: Mitotic chromosome figures. –3: *Ficus carica* $2n=26$. –4: *F. johannis*, $2n=26$. –5: *F. rupestris*, $2n=26$.