

CHROMOSOME NUMBERS OF ASTRODAUCUS ORIENTALIS AND ALTHAEA OFFICINALIS FROM IRAN

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Chromosome numbers of two native species from Iran were determined. The samples were collected from natural habitats. *Astrodaucus orientalis* ($2n=20$) of Apiaceae family and *Althaea officinalis* ($2n=42$) of Malvaceae family were investigated in this research. Ideograms were depicted for each species. *Althaea officinalis* had metacentric chromosomes. In *Astrodaucus orientalis* the karyotype formulas are $8m+2sm$. These results are the first report for the Iranian flora.

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Key words: chromosome numbers; *Althaea officinalis*; *Astrodaucus orientalis*; Iran

اعداد کروموزومی گونه‌های *Astrodaucus orientalis* و *Althaea officinalis* از ایران
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تعداد کروموزوم دو گونه بومی از ایران مشخص شد. نمونه‌ها از رویشگاه طبیعی جمع‌آوری شدند. *Astrodaucus orientalis* ($2n=20$) از خانواده Apiaceae و *Althaea officinalis* ($2n=42$) از خانواده Malvaceae در این تحقیق مورد بررسی قرار گرفتند. برای هر گونه ایدیوگرام رسم شد. کروموزوم‌های گونه *Althaea officinalis* متاساتریک می‌باشد. فرمول کاریوتایی *Astrodaucus orientalis* $8m+2sm$ است. این نتایج اولین گزارش برای فلور ایران است.

INTRODUCTION

This is a report of chromosome numbers of two native species from Iran. The cytogenetic studies have been performed on the species of the flora of Iran with diverse goals. This research was carried out in a research project for chromosome number of native species of Iran.

MATERIALS AND METHODS

The seeds of each species were collected from natural habitats in Iran (99029, 99030 TARI). The seeds were grown in lab. Root tip's meristems were used for cytological studies. The tips were pretreated in

alpha-bromonaphthalene for two hours and then fixed in a cold mixture of ethanol and acetic acid (3: 1) for 4 hours. Temporary slides were made by squashing the cut and stained meristems in hematoxylin.

RESULTS

Apiaceae

Astrodaucus orientalis Drude

Specimen studied: Fars province, Shiraz, Tangeh Bolhayat, 1972 m, 11.08.2011, N 29°08'47", E 48°57'.82". Mohebi 99029(TARI).

The genus *Astrodaucus* Drude (Apiaceae, Caucalideae) is represented by 2 biennial or perennial

species in Iran. *Astrodaucus orientalis* is found in the fields, steps and road sides from 350 to 2700 m (Rechinger 1987). This species is a biennial distributed in north, northwest, centre, west and northeast of Iran. The chromosome counts of the genus previously reported are:

A. orientalis $2n=20$ (Ozturk & al. 2009), *A. persicus* $2n=20$ (Ghahremaninejad & al. 2013).

The chromosome number of this species in Iran like previous report is $2n=2x=20$ (fig. 1). The karyotype consists of small chromosome, mostly of m and sm type. The karyotype formulas are $8m+2sm$. (fig. 2). Most of them are metacentric. It is categorized in type 1A (Stebbins, 1971).

Malvaceae

Althaea officinalis L.

Specimen studied: Azarbayejan province. Salmas Khantakht, 1330m, 18.09.2010, N $38^{\circ}.07'.68''$, E $44^{\circ}.56'.41''$. Mohebi 99030 (TARI).

The genus *Althaea* represents five annual and perennial species in Iran. *Althaea officinalis* is distributed in north, north-west, west and central areas of Iran (Pakravan 2008).

The Previous chromosome counts on *Althaea officinalis* are:

$2n=40-44$ (Davie 1933), $2n=40$ (Amadei & al., 1983 Pastor 1992), $2n=42$ (Skovsted 1935), $2n=ca. 42$ (Wulff 1937. Maude & Pamela 1939 & Queirós 1977), $2n=42$ (Delay 1948, Pólya 1950. Skalinska *et al.* 1971, Hindáková & Lhotská 1980, Ukriková & Schwarzová 1980. Strid & Franzen, 1981, Dempsey *et al.* 1994).

The somatic chromosome number $2n=2x=42$ is reported here (fig. 1). The studied karyotype (fig 2) consists of almost the medium size chromosomes. Most of them are different in length and all metacentric = $21m$. Karyotype was mostly symmetrical and are placed in Stebbins 1A category of symmetry (Stebbins 1971).

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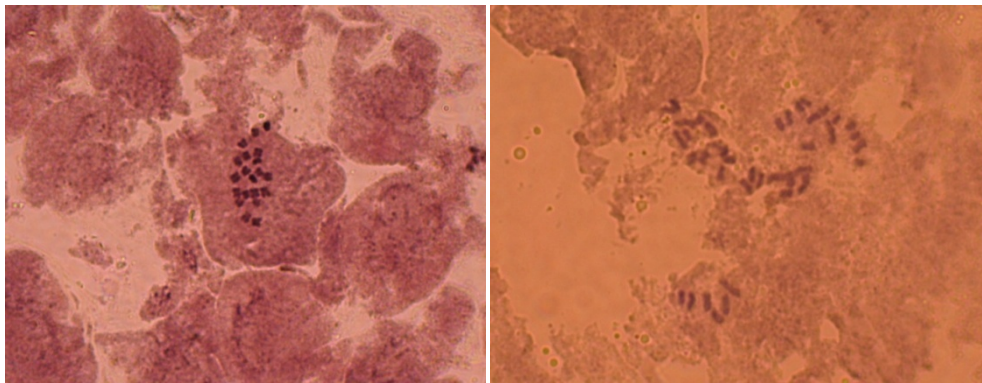


Fig. 1. Somatic metaphases in *Althaea officinalis* (left) and *Astrodaucus orientalis* (right).

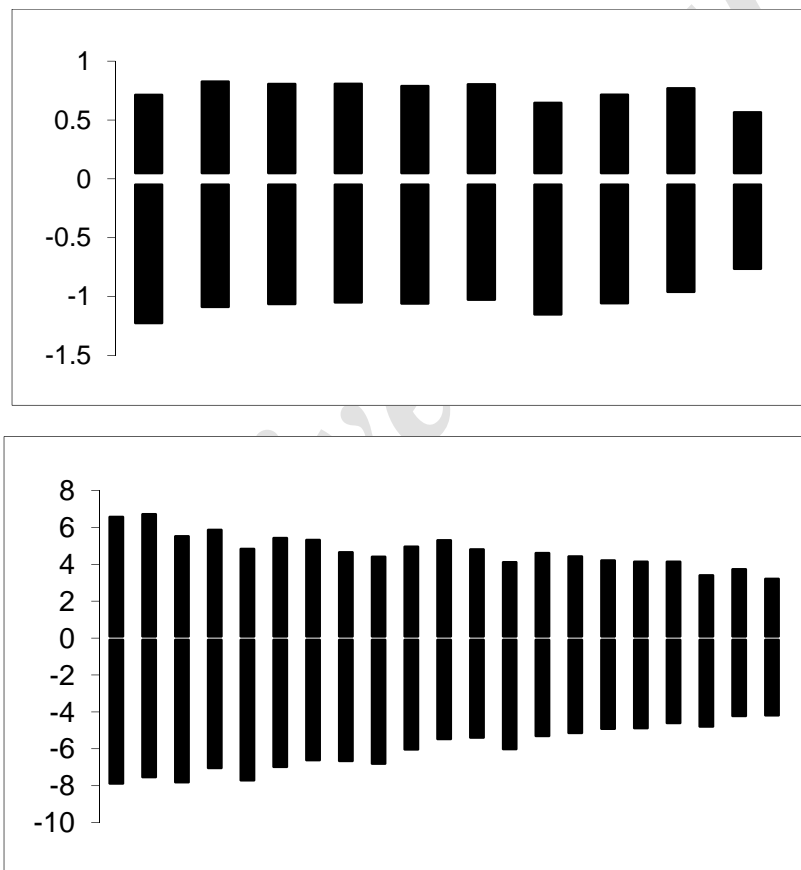


Fig. 2. Ideograms of *Astrodaucus orientalis* (above) and *Althaea officinalis* (below).