

CHROMOSOME NUMBERS OF *PARONYCHIA KURDICA* AND *SALSOLA YAZDIANA*

S.S. Mirzadeh Vaghefi, A. Jalili, F. S. Ghasemi & S. Ashrafi

Received 2014. 07. 27; accepted for publication 2014. 09. 03

Mirzadeh Vaghefi, S.S., Jalili, A., Ghasemi, F.S., Ashrafi, S. 2014. 12. 31: Chromosome numbers of *Paronychia kurdica* and *Salsola yazdiana*.- *Iran. J. Bot.* 20 (2): 230-232. Tehran

Chromosome numbers were determined for the first time for 2 native species of Iran. The samples were collected from natural habitats. *Paronychia kurdica* (2n=18) of Caryophyllaceae family and *Salsola yazdiana* (2n=18) of Chenopodiaceae family were examined in this study. Ideograms were depicted for each species. Both of them had metacentric chromosomes.

Saeedeh Sadat Mirzadeh Vaghefi (Correspondence <mirzadeh@rifr-ac.ir>), Adel Jalili, , Farzaneh Sadat Ghasemi & Soheila Ashrafi, Research Institute of Forest & Rangelands, P.O.Box. 13185-116, Tehran, Iran.

Key words: Chromosome numbers; *Salsola yazdiana*; *Paronychia kurdica*; cytogenetic; Iran

شمارش کروموزومی گونه های *Paronychia kurdica* و *Salsola yazdiana*

سعیده سادات میرزاده واقفی، کارشناس ارشد مؤسسه تحقیقات جنگل ها و مراتع کشور، تهران، ایران

عادل جلیلی، استاد پژوهش مؤسسه تحقیقات جنگل ها و مراتع کشور، تهران، ایران

فرزانه سادات قاسمی، کارشناس ارشد مؤسسه تحقیقات جنگل ها و مراتع کشور، تهران، ایران

سهیلا اشراقی، کارشناس ارشد مؤسسه تحقیقات جنگل ها و مراتع کشور، تهران، ایران

شمارش کروموزومی برای دو گونه بومی از ایران برای اولین بار صورت گرفت. نمونه ها از رویشگاه های طبیعی جمع آوری شدند. *Paronychia kurdica* (2n=18) از خانواده Caryophyllaceae و *Salsola yazdiana* (2n=18) از خانواده Chenopodiaceae در این تحقیق مورد بررسی قرار گرفتند. برای هر گونه ایدیوگرام رسم شد. کروموزومهای هر دو گونه متاساتریک بودند.

INTRODUCTION

The cytogenetic studies of the species of the flora of Iran have been the subject of many previous works with different aims. The results of such studies have been interpreted in systematic, evolution, horticulture, plant breeding, etc. A review of the chromosome data of Iranian plant species has been provided by Ghahremaninejad et al. (2013). This research was acquired in a research project for chromosome numbers of native and endemic species of Iran.

MATERIALS AND METHODS

This study was carried out by using seeds collected from natural habitats in Iran. The seeds were grown in lab. Cytological studies were done by using root tip's meristemes. 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

Caryophyllaceae

Paronychia kurdica Boiss.

Specimen studied: Zanjan, 15km to Mahnesan from Zanjan Miane befor Andobad, 1755m, 14.09.2010, N 36°48'.89", E 48°00'.28", Mohebi 101569 (TARI).

The genus *Paronychia* Miller (Caryophyllaceae, Paronychioideae) is distributed in dry regions in southwest Asia. The genus in Iran is represented by 6 annual and perennial species from which 2 are endemics. *Paronychia kurdica* is a perennial species distributed in north, northwest, centre, west, southwest and south Iran (Chaudhri 1980; Dinarvand 2009). The chromosome counts of the genus previously reported are:

Paronychia polygonifolia (Vill.) DC. $2n=14$ (Küpfer 1974, Galland & Küpfer 1984, Diosdado et al. 1994, Blackburn & Morton 1957); *P. pulvinata* $2n=32$; *P. sessiliflora* $2n=64$ (Hartman 1974).

The chromosome number of *P. kurdica* is $2n=2x=18$ that is reported here for the first time (fig. 1). The chromosomes are moderate in size. Their arms are roughly equal in length (all metacentric=9m) (fig. 2). The karyotype is moderately symmetrical and is categorized in type 1A (Stebbins 1971).

Chenopodiaceae

Salsola yazdiana Assadi

Specimen studied: Yazd, 40 km to Yazd from Anar, 1505m, $31^{\circ} 6'30.95''N$, $55^{\circ} 0'4.28''E$, Shams 101568 (TARI).

The genus *Salsola* belongs to tribe Salsoleae in the family Chenopodiaceae. The genus is distributed in central and southwestern Asia, north Africa and Mediterranean Region. In Iran 40 annuals and perennials species are present from which two species are endemics. This shrubby species (*Salsola yazdiana*) is endemic to central and south west areas of Iran (Assadi 2001). It grows on sand dunes and saline plains.

The Previous cytological studies about this genus are:

S. abarghuensis, $2n=4x=36$ (Ghaffari, 2008); *S. oppositifolia*, $2n=72$ (Peruzzi & CESCO, 2004); *S. kali* ssp. *austroafricana*, $2n=18$ (DiTomaso et al. 2007); *S. kali*, $2n=2x=38=22M+8m+6sm$; *S. crassa*, $2n=2x=36=14M+16m+6sm$; *S. tomentosa*, $2n=2x=36=14M+20m+2sm$; *S. turkestanica*, $2n=2x=18=10M+6m+1sm$; *S. incanescens*, $2n=2x=18=4M+14m$; *S. dendroides*, $2n=2x=18=6M+12m$. The basic chromosome number for the genus (x) is $x=9$ (Bakhshi khaniki & Maroof 2006).

The somatic chromosome number $2n=2x=18$ is reported here (fig. 1). The studied karyotype (fig. 2) consists of approximately the same size chromosomes. Their arms roughly are equal in length (all metacentric=9m). It has moderately symmetrical karyotype and is categorized in type 1A type (Stebbins 1971).

REFERENCES

- Assadi, M., 2001: Chenopodiaceae. In Flora of Iran no. 38: 260-261.- Tehran.
- Bakhshi khaniki, GH.R., Maroof E., 2006: Ecocytological study of some species of the genus *Salsola* L. in Iran.-PAJOUHESH-VA-SAZANDEGI 19 (72 IN AGRONOMY AND HORTICULTURE): 66-72.
- Blackburn, K. B. & J. K. Morton 1957: The incidence of polyploidy in the Caryophyllaceae of Britain and of Portugal.- New Phytol. 56: 344-351.
- Chaudhri, M. N. 1980: *Paronychia*. In K.H. Rechinger (ed.) Flora Iranica no. 144: 6-13.-Akademische Druck-u.-Verlagsanstalt. Graz.
- Dinarvand, M. 2009: *Paronychioideae*. In M. Assadi & al. (eds.), Flora of Iran no. 65: 16-19. Tehran.
- Diosdado, J. C., Ojeda, F. & Pastor, J. 1994: In A. Stace (ed.) Intern. IOPB. Chromosome data 7 Organ. -Plant Biosyst 22: 3-4.
- Gaffari, S.M. 2008: Chromosome reports for some plant species from Iran.- Iranian Journal of Botany 14(1): 39-46.
- Galland, N. & P. Küpfer, 1984: La différenciation Caryologique de quelques orophytes Ouest-Européens-Maghrébins et le problème de leur mise en place. . Webbia 38: 473-490.
- Ghahremaninejad, F., Najad Falatoury, A., Mahmoodi, M., Fereidounfar, S., Hoseini, E. 2013.- Plant Chromosome Book of Iran, Biology Home Press, 194pp. Tehran.
- Hartman, R. 1974: Rocky Mountain species of *Paronychia* (Caryophyllaceae), morphological, cytological and chemical study.- Brittonia 26: 256-263.
- DiTomaso, J. M., Healy, E. A. 2007: Weeds of California and other Western States, Volume 1.- UCANR Publications 625.
- Küpfer, P. 1974: *Recherches sur les liens de parenté entre la flore orophile des Alpes et celledes Pyrénées.* .- Boissiera 23: 3-322.
- Peruzzi, L. & Cesca, G. 2004: Chromosome numbers of flowering plants from Calabria, S Italy, II.- Willdenowia 34: 353-360.
- Stebbins, G., L. 1971: Chromosome evolution in higher plants. Edward Arnold Publisher, London.

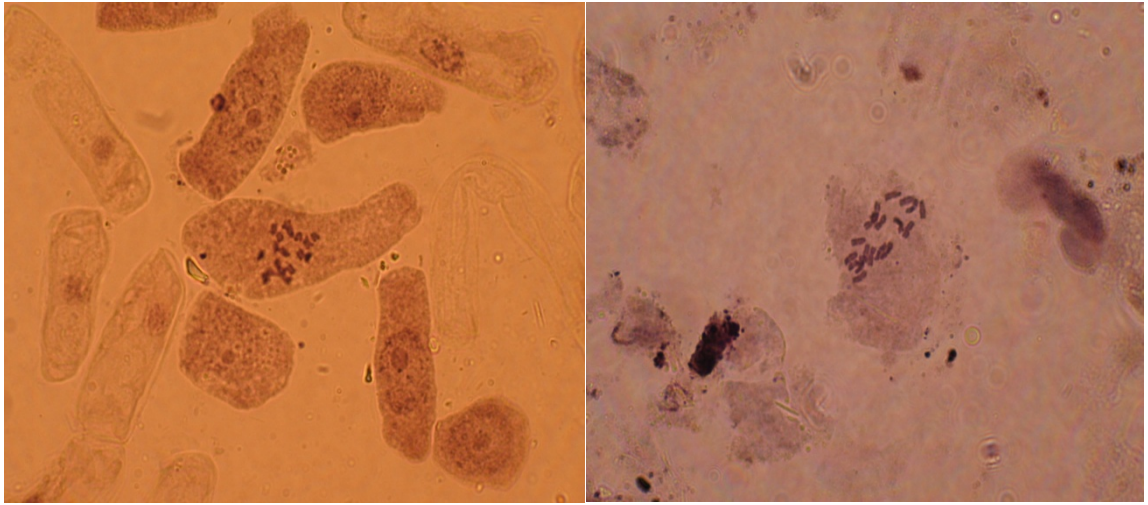


Fig. 1. Somatic metaphases in *Paronychia kurdica* (left) and *Salsola yazdiana* (right).

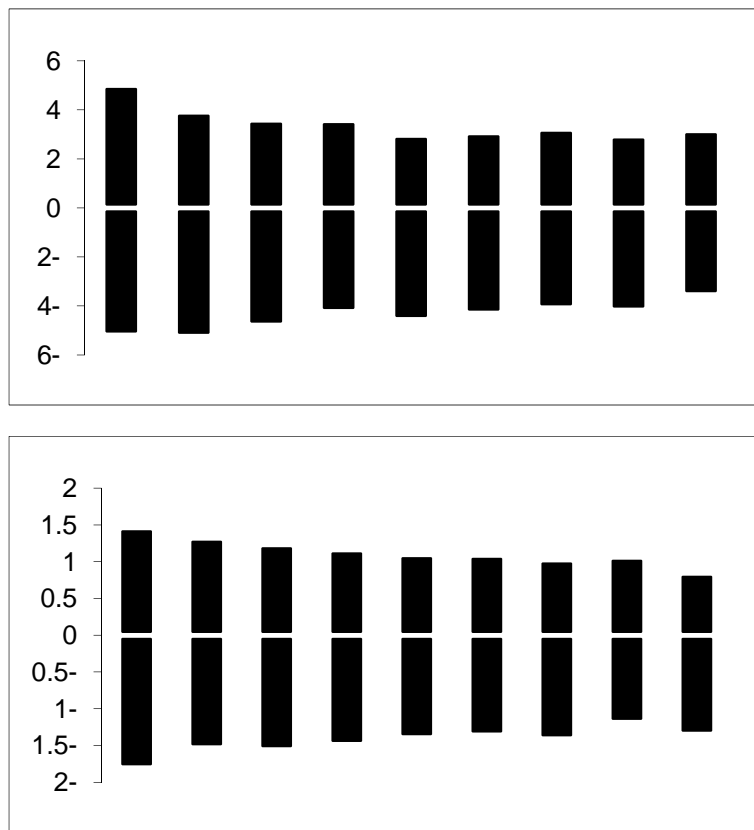


Fig. 2. Ideograms of *Paronychia kurdica* (above) and *Salsola yazdiana* (below).