

# CHROMOSOME COUNTS OF FRANKENIA HIRSUTA AND CHENOPODIUM FOLIOSUM FROM IRAN

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The paper reports somatic chromosome numbers for two native Iranian species: *Frankenia hirsuta* ( $2n=10$ ) of Frankeniaceae family, *Chenopodium foliosum* ( $2n=18$ ) of Chenopodiaceae family. Their chromosome numbers are reported as the first counts on Iranian populations. Ideograms were depicted for each species.

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**Key words:** Chromosome numbers; *Chenopodium foliosum*; *Frankenia hirsuta*; ideograms; Iran

شمارش کروموزومی گونه های *Frankenia hirsuta* و *Chenopodium foliosum* در ایران

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در این مقاله تعداد کروموزوم‌ها برای دو گونه *Frankenia hirsuta* ( $2n=10$ ) از خانواده Frankeniaceae و *Chenopodium foliosum*

( $2n=18$ ) از خانواده Chenopodiaceae گزارش شد. شمارش کروموزومی آنها برای اولین بار در جمعیت‌های ایران صورت گرفته است.

ایدیوگرام هر گونه رسم گردید.

## INTRODUCTION

Chromosome numbers and karyotypes can provide useful information for the assessment of taxonomic relationships (Stace 2000). This is a report of chromosome number of two native species of Iran, which is the first counts for them (Based on Ghahremaninejad & al. 2013).

The chromosome counts of the genus *Frankenia* previously reported are: *F. tvinica* Lomon.  $2n = 20$  (Lomonosova & Sukhorukov 2015), *F. pulverulenta* L. (Hua Shu 2007). *F. thymifolia* Desf.  $2n=10$  (Valdes-Bermejo & Garcia 1978), *F. laevis* L.  $2n=30$  (Lago & Castroviejo 1993).

Chromosome number of *Chenopodium* was previously reported as *Ch. Foliosum* (Moench) Aschers.  $2n=18$  (Lomonova & Krasnikov 1994), *Ch. album* L.  $2n=18$ ,  $2n = 54$  (Mukherjee 1986), *Ch. pumilio* R. Br  $2n=18$  (Rahiminejad & al. 2004), *Ch. album* L.  $2n=18$

(Rahiminejad 2006), *Ch. glaucum* L.  $2n=18$  (Rahiminejad 2006), *Ch. murale* L.  $2n=18$  (Rahiminejad 2006), *Ch. novopokroovskyanum* (Aellen) Uotila  $2n=18$  (Rahiminejad 2006), *Ch. opulifolium* Schrad. ex W.D. J. Koch & Ziz  $2n=54$  (Rahiminejad 2006).

This research was carried out in a research project for chromosome number of native species of Iran.

## MATERIALS AND METHODS

Specimens and seeds were collected from natural habitats in 2011 and 2012 and the seeds were used for chromosome counts. Staining of root tips was carried out for 1–2 h and root tips were put in hematoxylin for 5–10 min to improve staining. Finally, squash preparations were made. Chromosome nomenclature follows Levan & al. (1964).

**RESULTS****Frankeniaceae***Frankenia hirsuta* L.

Specimen studied: Tehran province, Karaj, first on the road of Chalus, Khozankala, south of Khor village, 2330-2400 m, 13.09.2012, 35°54'36.54"N, 51°9'15.18"E. Mohebi 102872(TARI).

It was determined the chromosome number of this species as  $2n=10$  ( $x=5$ ) (fig. 1a). All chromosomes are metacentric (m) (fig. 1a). Karyotype was mostly symmetrical and is placed in Stebbins 1A category of symmetry (Stebbins 1971).

**Chenopodiaceae***Chenopodium foliosum* (Moench) Aschers.

Specimen studied: Tehran province, Shemshak to Dizin, 3000 m, 14.08.2011, 36°2'3.28"N, 51°28'9.22"E. Mirzadeh 102873(TARI).

It was founded chromosome number  $2n=18$  ( $x=9$ ) for this species (fig. 1b). Its karyotype consists of 18 chromosomes with the centromere in median regions (m) (fig. 1b). It is categorized in type 1A (Stebbins, 1971).

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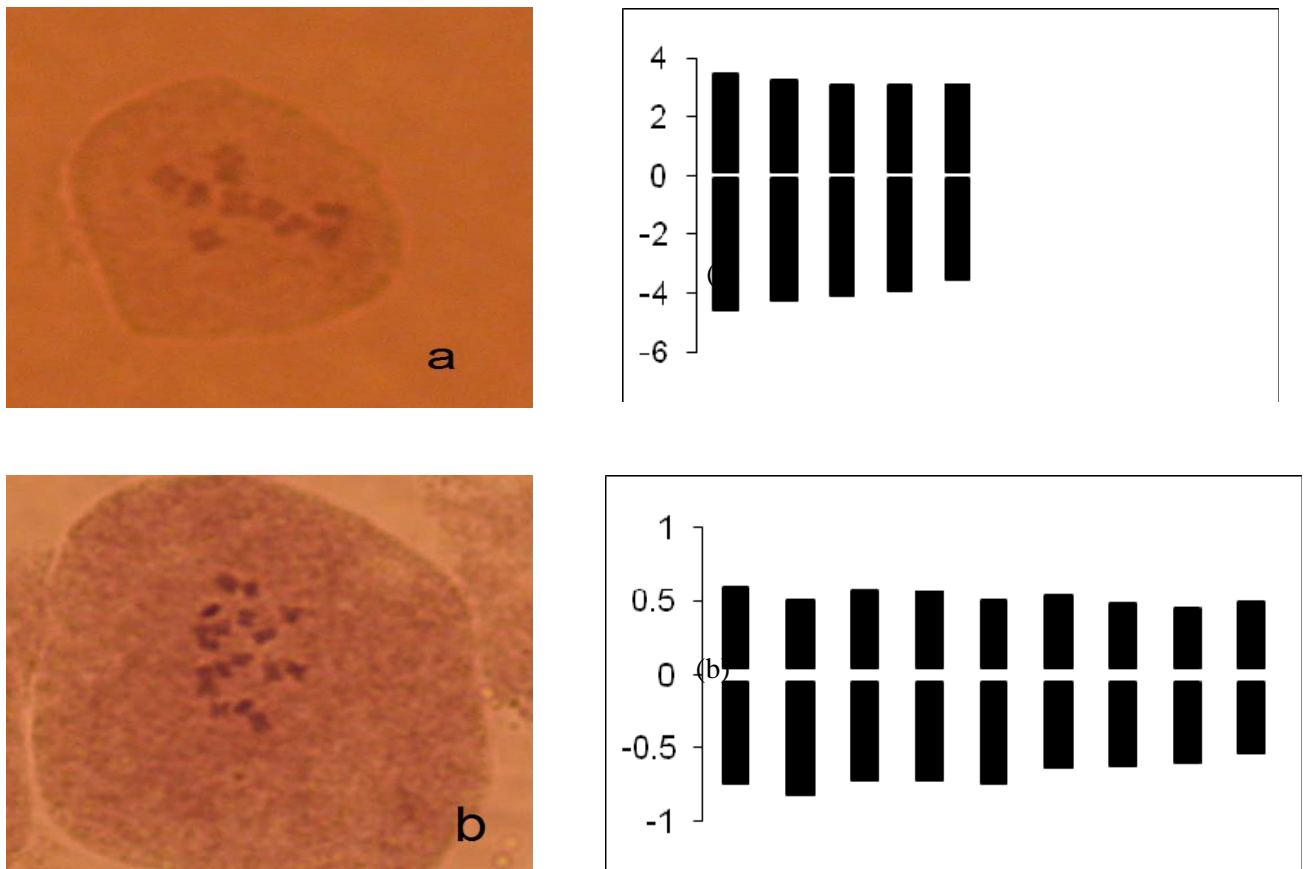


Fig. 1. Somatic metaphases (left) and Ideograms (right) in a: *Frankenia hirsuta* ( $2n=10$ ); b: *Chenopodium foliosum* ( $2n=18$ ).