

G. Barone, E. Di Gristina, R. El Mokni & G. Domina

Karyological data of four geophytes native to Tunisia

Abstract

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Chromosome numbers were studied in four geophytes collected in Tunisia. *Allium pallens* was collected from Zembra island, N of Tunisia, while *Drimia purpurascens*, *Oncostema peruvianum* and *Pancreatium foetidum* from continental Tunisia. The chromosome numbers found for *Allium pallens*, *Drimia purpurascens*, and *Oncostema peruvianum* coincides with the previous reports obtained from other Mediterranean populations. The chromosome number $2n = 22$, found on material from Toujane is the first reported for *Pancreatium foetidum*.

Keywords: Chromosome number, North Africa, *Allium pallens*, *Drimia purpurascens*, *Oncostema peruvianum*, *Pancreatium foetidum*.

Introduction

In the course of floristic and biological investigations on the flora of Tunisia in the last 10 years, geophyte seeds and bulbs have been collected and cultivated at the Botanical Garden of Palermo. The karyological investigations on the cultivated plants enriches the knowledge on this peculiar flora. Monocotyledonous geophytes make up about 6 percent of the entire flora (cfr. El Mokni & al. in press). Of these, 25 are endemic to Tunisia or to Tunisia and the surrounding countries (Domina & El Mokni 2018). Although monocotyledonous geophytes are among the most investigated plants from the cariological point of view, the knowledge on this component of the flora of Tunisia is limited to a few contributions (Battaglia 1957; Hong 1982; García-Barriuso & al. 2010; Ferjani & al. 2015).

2000. *Allium pallens* L. — $2n = 4x = 32$ (Fig. 1a).

Tn: Island of Zembra, hills above the village, 50 m a.s.l., 37.120615° N, 10.809218° E, 10 May 2013, G. Domina (Hort. coll. PAL).

Allium pallens L. (sect. *Codonoprasum* Rchb.) is a geophyte widespread in the Mediterranean area, in particular Portugal, Spain, Balears, France, Italy, Sicily, Greece, Aegean Islands, Cyprus, W and S Turkey, Syria, Lebanon, Israel, Egypt, Tunisia, Algeria and Morocco. It is a synanthropic species, occurring in nitrophilous habitats as cultivated or abandoned fields (vineyards, olive-grove), roadsides, sometimes in natural environments as garigues, maquis and meadows where it flowers in early summer. *A. pallens* is a critical species, often taxonomically misidentified in the European and Mediterranean Floras. It is closely related to *A. convallarioides* Grossh., a diploid species linked to natural habitats, which can be considered its probable ancestor (Brullo & al. 2003).

The chromosome number $2n = 4x = 32$ (Fig. 1a), found here on material from the island of Zembra (Tunisia) coincides with the previous reports obtained in Italy (Marchi & al. 1974; Brullo & al. 2003) and other Mediterranean countries (Tanker & Kurucu 1979; Pastor 1985; Tzanoudakis 1999; Brullo & al. 2003). Also the chromosome number $2n = 16$ is known for *A. pallens* (Pastor 1982; Ruíz Rejón & al. 1986).

2001. *Drimia purpurascens* J. Jacq. — $2n = 2x = 20$ (Fig. 1b).

Tn: Djebel Boukornine, 300 m a.s.l., 36.697365° N, 10.340933° E, 24 Mar 2014, *G. Domina* (Hort. coll. PAL).

Drimia purpurascens J. Jacq. is a critical species, often taxonomically misidentified in the Mediterranean Floras. The species was published by Jacquin (1812) on plants cultivated in Vienna (Austria), received by the Botanical Garden of Milan (Italy) with the name “*Drimia undulata*”. The origin of those plants was unknown, but they were placed at the Vienna Botanical Garden along with South African bulbous plants, and it was implicitly assumed that they were native to southern Africa. From that time, *D. purpurascens* is widely accepted to be a synonym of *D. elata* Jacq., a species widespread from Sudan to South Africa. However, a nomenclatural and taxonomic study on the taxa of the *Drimia undata* group (Crespo & al. 2020) made it possible to clarify the taxonomic position of *D. purpurascens*. In fact, a close examination of the illustration in the protologue of *D. purpurascens* (the only extant original material of that name) revealed important morphological differences that make the synonymization with *D. elata* incorrect. On the contrary, main morphological characteristics of *D. purpurascens* closely relate it to *D. undata* Stearn (Crespo & al. 2020).

The chromosome number $2n = 2x = 20$ (Fig. 1b), found here on material from Bou Kourmine (Tunisia) does not agree with the number reported for *Drimia elata* ($2n = 18$) by Cave (1957) and Fedorov (1974) but it coincides with the one reported by Martinoli (1949), Battaglia (1957) and Bartolo & al. (1984).

2002. *Oncostema peruvianum* (L.) Speta — $2n = 2x = 16$ (Fig. 1c).

Tn: Matmatat-Al-Qadimal, 400 m a.s.l., 33.539738° N, 9.989747° E, 29 Apr 2019, *G. Domina* & *R. El Mokni* (Hort. coll. PAL).

Oncostema peruvianum (L.) Speta is a geophyte whose distribution extends from South Africa, into Europe and Asia (Azizbekova & al. 1997). It is an attractive floral species with excellent commercial potential. *O. peruvianum* have different chromosome numbers due to changes in the nucleolar chromosomes and polyploidy (Carmona & al. 1984).

The chromosome number $2n = 2x = 16$ (Fig. 1c), found here on material from Matmatat-Al-Qadimal (Tunisia) is included in the variability ($2n = 14$, $2n = 15$, $2n = 16$, $2n = 28$, $2n = 32$) reported for the *Oncostema peruvianum* group (Battaglia 1949, 1950; Carmona & al. 1984; Luque 1988).

2003. *Pancratium foetidum* Pomel — $2n = 2x = 22$ (Fig. 1d).

Tn: Toujane, 550 m a.s.l., 33.460248° N, 10.139170° E, 29 Apr 2019, *G. Domina & R. El Mokni* (Hort. coll. PAL).

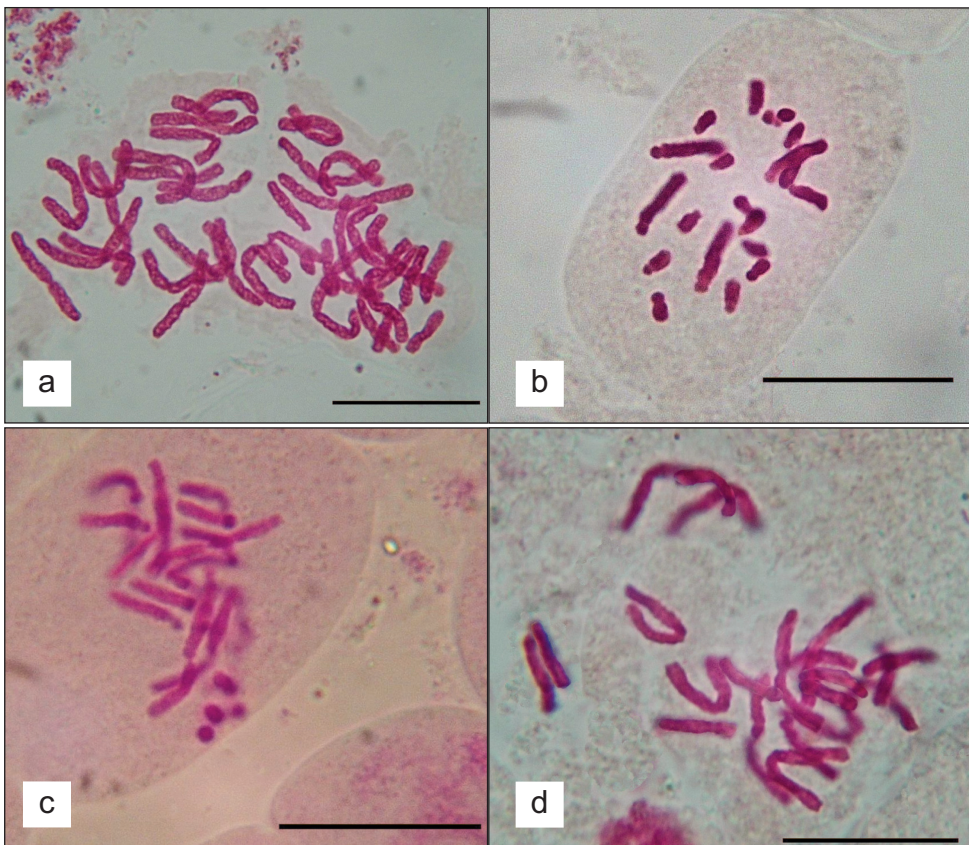


Fig. 1. Microphotographs of mitotic metaphase plates of: **a**, *Allium pallens*, $2n = 32$; **b**, *Drimia purpurascens*, $2n = 20$; **c**, *Oncostema peruvianum*, $2n = 16$; **d**, *Panocratium foetidum*, $2n = 22$. – Scale bars: 10 μ m.

Pancratium foetidum Pomel is a geophyte native of NW-Africa, occurring from Morocco to Libya (El Gadi 1978). It was also found in Malta by Lanfranco & Spiteri (2001). *P. foetidum* is vegetatively similar to *P. maritimum* to such an extent that the two species are indistinguishable in the field when not in flower or fruit. However, they can be easily separated during flowering or fruiting. In fact, the flowers of *P. foetidum* are considerably smaller compared to those of *P. maritimum* and furthermore, its flowers are foul-smelling in contrast to the fragrant flowers of *P. maritimum*. *P. foetidum* flowers mainly in Late September and October while *P. maritimum* flowers mainly in summer with only a brief overlap in the flowering period between the two species. *P. foetidum* has stamens about equal to the coronal teeth while in *P. maritimum* these are longer. The fruit in *P. foetidum* is oblong in contrast to the subglobular fruit of *P. maritimum* and carries much smaller seed (Lanfranco & Spiteri 2001).

The chromosome number $2n = 2x = 22$ (Fig. 1d), found here on material from Toujane (Tunisia) is the first report for this species.

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Addresses of the authors:

Giulio Barone¹, Emilio Di Gristina^{1*}, Ridha El Mokni^{2, 3} & Gianniantonio Domina¹,
¹Department of Agricultural, Food and Forest Sciences, University of Palermo, Viale delle Scienze, Bldg. 4, I-90128 Palermo (Italy). E-mails: emilio.digristina@unipa.it; giulio_barone01@unipa.it; gianniantonio.domina@unipa.it

²University of Monastir, Laboratory of Botany, Cryptogamy and Plant Biology, Faculty of Pharmacy of Monastir, Avenue Avicenna, 5000-Monastir, Tunisia. E-mail: ridha.elmokni@fphm.rnu.tn.

³University of Carthage, IRESA, Laboratory of Forest Ecology, National Research Institute of Rural Engineering, Water and Forests, Ariana 2080, Tunisia

*corresponding author.