

Cytotaxonomical notes on *Allium grosii* Font Quer from Ibiza (Balearic Islands)

Autor(en): **Brullo, Salvatore / Pavone, Pietro / Salmeri, Cristina**

Objektyp: **Article**

Zeitschrift: **Candollea : journal international de botanique systématique = international journal of systematic botany**

Band (Jahr): **47 (1992)**

Heft 1

PDF erstellt am: **22.07.2024**

Persistenter Link: <https://doi.org/10.5169/seals-879565>

Nutzungsbedingungen

Die ETH-Bibliothek ist Anbieterin der digitalisierten Zeitschriften. Sie besitzt keine Urheberrechte an den Inhalten der Zeitschriften. Die Rechte liegen in der Regel bei den Herausgebern.

Die auf der Plattform e-periodica veröffentlichten Dokumente stehen für nicht-kommerzielle Zwecke in Lehre und Forschung sowie für die private Nutzung frei zur Verfügung. Einzelne Dateien oder Ausdrucke aus diesem Angebot können zusammen mit diesen Nutzungsbedingungen und den korrekten Herkunftsbezeichnungen weitergegeben werden.

Das Veröffentlichen von Bildern in Print- und Online-Publikationen ist nur mit vorheriger Genehmigung der Rechteinhaber erlaubt. Die systematische Speicherung von Teilen des elektronischen Angebots auf anderen Servern bedarf ebenfalls des schriftlichen Einverständnisses der Rechteinhaber.

Haftungsausschluss

Alle Angaben erfolgen ohne Gewähr für Vollständigkeit oder Richtigkeit. Es wird keine Haftung übernommen für Schäden durch die Verwendung von Informationen aus diesem Online-Angebot oder durch das Fehlen von Informationen. Dies gilt auch für Inhalte Dritter, die über dieses Angebot zugänglich sind.

Cytotaxonomical notes on *Allium grosii* Font Quer from Ibiza (Balearic Islands)

SALVATORE BRULLO
PIETRO PAVONE
&
CRISTINA SALMERI

RÉSUMÉ

BRULLO, S., P. PAVONE & C. SALMERI (1992). Notes cytotaxonomiques sur *Allium grosii* Font Quer d'Ibiza (Baléares). *Candollea* 47: 77-81. En anglais, résumés français et anglais.

Allium grosii est une très rare espèce endémique des falaises calcaires septentrionales d'Ibiza. Cette espèce est assez isolée taxonomiquement et appartient à l'*A.* sect. *Scorodon*. Par son écologie, sa morphologie florale et son nombre chromosomique de $2n = 46$, *A. grosii* peut être considéré comme un paléo-polyploïde.

ABSTRACT

BRULLO, S., P. PAVONE & C. SALMERI (1992). Cytotaxonomical notes on *Allium grosii* Font Quer from Ibiza (Balearic Islands). *Candollea* 47: 77-81. In English, French and English abstracts.

Allium grosii is a very rare endemic species occurring in the northern calcareous cliffs of Ibiza. It is a species quite isolated taxonomically belonging to *A.* sect. *Scorodon*. Because of its ecology, flower morphology and chromosome complement of $2n = 46$, it can be considered a paleo-polyploid.

Introduction

The genus *Allium* is represented in Ibiza (Balearic Islands) by eleven species, three of which are endemic, i.e. *A. grosii* Font Quer, *A. ebusitanum* Font Quer and *A. eivissanum* Miceli & Garbari, the latter occurs in Formentera too (PASTOR & VALDÉS, 1983; STEARN, 1983; MICELI & GARBARI, 1987; BECKETT, 1988). Among these endemic species, *A. grosii* has a remarkable importance because of its rarity and taxonomical position as well as its phytogeographical role.

Recently, some populations of this geophyte have been collected in the northern coast of Ibiza, where they are localized on the shady rocky places. The living material, cultivated in the Botanical Garden of Catania, has been utilized for a karyological and morphological investigation. It represents a contribution for the improvement in the cytotaxonomical knowledge about this species, which had not been object of any specific study up to now.

Material and methods

The present investigation is based mainly on living material. Live bulbs were collected in two localities of Ibiza (Cala Aubarca, Puerto de San Miguel) and cultivated in the Botanical Garden of Catania (Sicily). The karyological study was carried out on mitotic metaphase plates using the root tip squashing method in accordance with BRULLO & PAVONE (1983a). The leaf anatomy

was studied fixing in karpentshenko and ebbending in paraffin cultivated material. Herbarium specimens (MA, SEV) and personal collections (CAT) were examined too.

Description

Allium grosii Font Quer, Buttl. Inst. Catalana Hist. Nat. 24: 145 (1924) (Fig. 1).

Type: In Ebuso, Cala Aubarca. Culta in Hort. Bot. Barcinonense, *Font Quer 20952* (MA). Lectotype.

Bulb ovoid, bulbiferous, up to 1.5 cm in diameter, with outer tunics coriaceous, brown-purplish and inner tunics membranaceous-hyaline, whitish. Stem 15-45 cm high, glabrous, erect, green-purplish, up to 1/3-1/4 of its length covered by the leaf sheaths. Leaves 3-4, flat or semi-cylindrical, 10-30 cm long, 2-3 mm wide, withered at the anthesis. Inflorescence lax, 6-24(-32)-flowered. Pedicels erect, unequal, 1-3 cm long. Spathe 2-valved; valves unequal, longe acuminate, shorter than the umbell, the larger 5-nerved, 1.5-3 cm long, the smaller 3-nerved, 1-2 cm long. Bos-tryces 8. Perigon cylindrical, lightly urceolate at apex, about 6.5-8 mm long. Tepals fleshy, oblong-elliptical, lightly undulate at apex, purple or pink-purplish with a dark-purplish mid-vein, the outer up to 2.5 mm wide, the inner up to 2.2 mm wide. Stamens included, simple, unequal, yellowish, suffused with purple in the upper part, connate at base into an annulus 1.5 mm high, the outer triangular, 1-1.5 mm long, the inner triangular, below dilated, 2 mm long. Anthers pink-purplish, 1.5 × 0.8 mm. Ovary green, globose or sub-globose, 1.7-2 mm in diameter, with well developed nectariferous pores. Style white, 1-1.2 mm long. Capsule 3-valved, sub-globose, 4-5 mm in diameter.

Specimens examined

Ibiza, Cala Aubarca, *Font Quer 20952* (MA); *ibid.*, 2.7.1980, *Kuhbier, Finschow & Torres 67376* (SEV); *ibid.*, 27.8.1987, *Bartolo & Brullo s.n.* (CAT); *ibid.*, 25.6.1990, *Bartolo & Brullo s.n.* (CAT); Puerto de San Miguel, 29.8.1987, *Bartolo & Brullo s.n.* (CAT).

Ecology

A. grosii occurs on the Mesozoic limestone of Ibiza, where it is localized in the rocky crevices or more rarely in the undergrowth Pine-woods. This rare chasmophyte is associated to *Helichrysum fontanesii* Camb., *Centaurea intybacea* Lam., *Scabiosa cretica* L., *Cephalaria balearica* Willk., *Thymus ebusitanus* Font Quer, *Silene hifacensis* Rouy, *Polygala rupestris* Pourr., *Micromeria filiformis* (Aiton) Benth., *Asperula pau* Font Quer, etc.

Caryology

All living plants of *A. grosii* examined show a somatic chromosome complement with $2n = 46$ (Fig. 2). According to the literature data, this count is reported for the first time in the genus *Allium*. Probably, the chromosome number of $2n = 46$ rises from an exaploid complement with $2n = 48$ through the loss of two chromosomes.

The occurrence of aneuploidy was previously observed in *A. eivissanum*, endemic of Ibiza too, which is characterized by a chromosome complement of $2n = 30$. According to MICELI & GARBARI (1987), also in this case it is an anomalous number probably derived from the tetraploid complement of $2n = 32$ occurring in the related species *A. cupanii* Rafin. for the loss of a sub-metacentric pair.

The idiogram of *A. grosii* (Fig. 3), based on the measurements of several metaphase plates, is characterized by 23 metacentric pairs, one of which results much longer than the remaining pairs, 2 submetacentric pairs, one of which microsatellited, and 3 microsatellited sub-telocentric pairs.

Leaf anatomy

The epidermis of the leaf blade of *A. grosii* (Fig. 4) is characterized by a developed cuticle and stomata distributed along the whole perimeter. The one-layered palisade tissue is regular and



Fig. 1. — *Allium grosii* Font Quer. A, habit; B, flower; C, perigon with stamens; D, spathe; E, ovary; F, capsule; G, anther; H, inflorescence diagram.

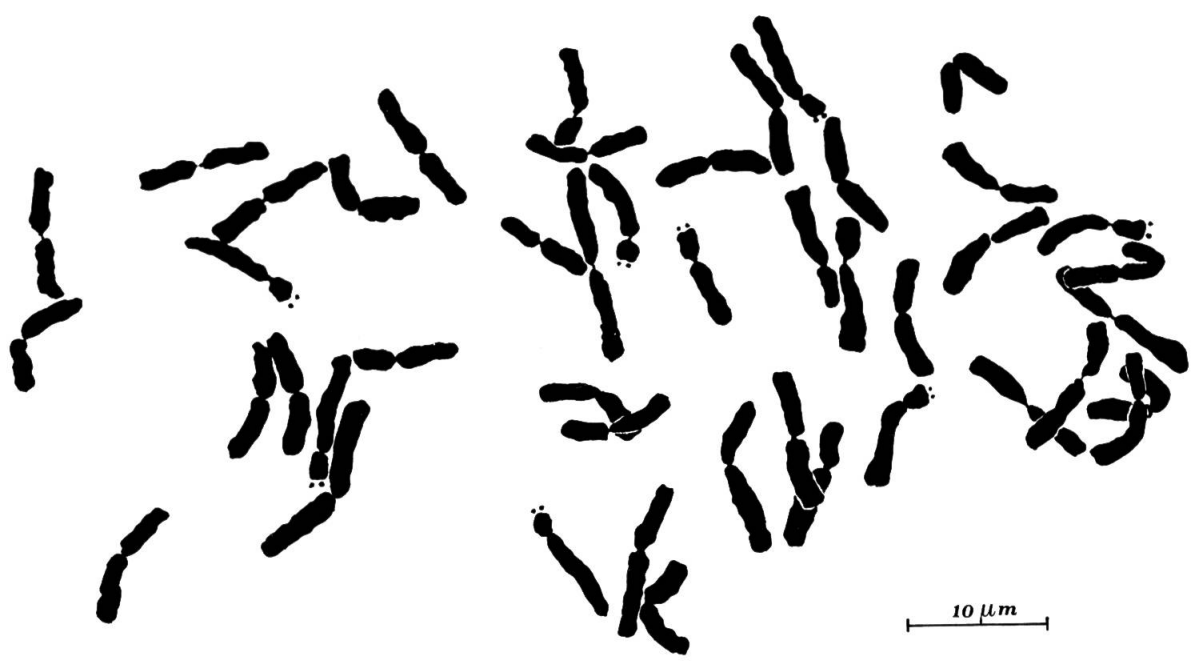


Fig. 2. — Mitotic metaphase plate of *Allium grosii* ($2n = 46$).

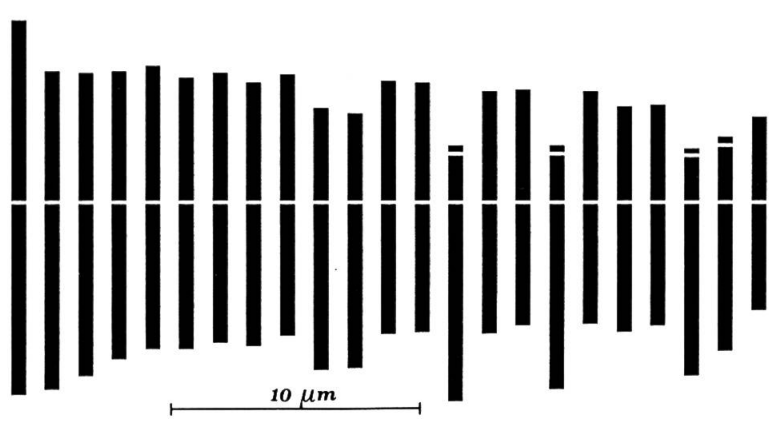


Fig. 3. — Idiogram of *Allium grosii*.

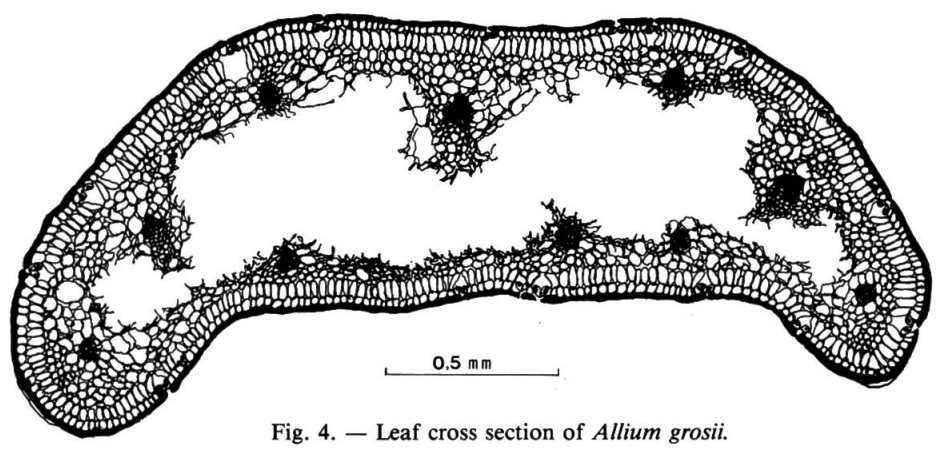


Fig. 4. — Leaf cross section of *Allium grosii*.

quite compact with shortly cylindrical or sub-cylindrical cells. The spongy tissue is formed by big and vacuolate cells with numerous secretory canals in the peripheral part. The leaf results largely fistulous in centre. The vascular bundles are 10, of which 5 abaxial (3 large and 2 small) and 5 small adaxial.

Taxonomical relationships

Due to the occurrence of spathe shorter than pedicels, simple stamens, included in the perigon, and ovary with distinct nectaries, *A. grosii* belongs to *A. sect. Scorodon*.

Within this section, *A. grosii* results a species taxonomically very isolated. For its habit and flower morphology, this species shows some relationships with *A. francinae* Brullo & Pavone from Marettimo (Sicily). In particular, both species are characterized by spathe much shorter than pedicels with valves 3-5-nerved, lax inflorescence arranged in eight bostryces, perigon sub-cylindrical, lightly urceolate at apex, stamens included and dilated at base, ovary with well developed nectariferous pores (BRULLO & PAVONE, 1983b). As regards the ecology, they have the same exigences; in fact, their bulbiferous bulbs are prevalently localized in the limestone crevices.

From the karyological view point, *A. grosii* and *A. francinae* have both a polyploid chromosome complement, respectively exaploid ($2n = 46$) and tetraploid ($2n = 32$).

These observations allow us to affirm that *A. grosii*, as well as *A. francinae*, can be considered a paleo-polyploid belonging to the old Tertiary flora because of its remarkable taxonomical isolament and its localization in rupestrian places, typical habitat of relict chasmophytes.

REFERENCES

- BECKETT, E. (1988). *Wild Flowers of Majorca, Minorca and Ibiza*. Rotterdam, Brookfield.
- BRULLO, S. & P. PAVONE (1983a). *Allium greuteri* sp. nova (Liliaceae) from Cyrenaica and its relationships with the *Allium cupanii* group. *Willdenowia* 13: 115-122.
- BRULLO, S. & P. PAVONE (1983b). *Allium francinae* specie nuova dell'Isola di Marettimo (Arcipelago delle Egadi). *Webbia* 37: 13-22.
- MICELI, P. & F. GARBARI (1987). *Allium eivissanum* (Alliaceae), a new species from Eivissa (Balearic Isles, Spain). *Willdenowia* 16: 383-390.
- PASTOR, J. & B. VALDÉS (1983). *Revisión del Género Allium (Liliaceae) en la Península Ibérica e Islas Baleares*. Anal. Univ. Hispalense, Ser. Ci., Otras Publ., Sevilla.
- STEARNS, W. (1983). The genus *Allium* (Alliaceae) on the Pityusic Islands. *Monogr. Biol.* 52: 171-184.

