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ORNITHOGALUM COLLINUM GUSS. (LILIACEAE):  
TYPIFICATION, CARYOLOGY  
AND LEAF ANATOMICAL CHARACTERS (\*\*)

**Riassunto** — *Tipificazione, cariologia e caratteristiche fogliari di Ornithogalum collinum Guss. (Liliaceae).* La geofita mediterranea *Ornithogalum collinum* Guss. viene tipificata sulla base di campioni dell'Erbario Siculo di Gussone (Napoli). Lo studio cariologico di alcune piante provenienti dalla Grecia indica il livello diploide ( $2n = 18$ ) dell'entità. Sono anche evidenziate alcune caratteristiche fogliari di particolare valore diagnostico.

**Abstract** — The mediterranean geophyte *Ornithogalum collinum* Guss. is typified on the base of a specimen from the Herbarium Siculum of Gussone (Naples). Some plants from Greece show  $2n = 18$  chromosomes: the species is to be considered diploid. Leaf anatomical characters of high a diagnostic value are also outlined.

**Key words** — *Ornithogalum* / typification / caryology / anatomy.

## INTRODUCTION

Recent important contributions have helped to throw new light on several problems in taxonomy and nomenclature concerning the genus *Ornithogalum* L.; several entities have been adequately identified and typified — it would seem definitively (RAAMSDONK, 1982; STEARN, 1983, 1984). Many problems, however, remain to be resolved concerning the correlation of caryological data with taxonomic, ecological and chorological information. In fact, in spite of the ease

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with which caryotype analyses can be effected (thanks to the large size of the chromosomes and their typology), in many cases it is difficult — or even impossible — to make cytological data and biosystematic or phytogeographic considerations agree. «The genus *Ornithogalum* is characterized caryologically by great inconstancy» (SIAMI, in STEARN, 1984), whether within a population or the individual. In this sense one of the least clear «complexes» is *O. gussonei* - *collinum*, in which the presence of supernumerary euchromatic chromosomes adds difficulties to observation (GARBARI & TORNADORE, 1971).

This short note concerns the typification of *O. collinum* Guss. and the caryology of few individuals — referable to this species — from Andros Phellos, Greece (Inv. 25/1977 n. 20 - *Cult. et exsicc.* in PI), kindly furnished by Dr. C. Zahariadi, the well-known expert on the genus *Ornithogalum* (ZAHARIADI, 1983, and references). Some leaf characteristics of particular diagnostical value are also illustrated.

#### CARYOLOGY

The caryotype was obtained by examination of root tips metaphase plates (Fig. 1) stained by means of the usual Feulgen



Fig. 1 - Somatic metaphase from root tips of *Ornithogalum collinum* Guss.,  $2n=18$ .

method. It can be expressed by the LEVAN et al. (1964) formula as follows (Fig. 2):

$$z=2n=18: 4m + 2sm + 2st + 4sm + 2st^s + 2sm + 2m$$

All the specimens examined resulted as being diploids; the basic chromosome number is  $n=9$ . Chromosome morphology and dimension — all between  $16,4 \mu\text{m}$  and  $6 \mu\text{m}$  — are similar to those found in many other entities of this genus (TORNADORE and GARBARI, 1979; COUDERC and *Alii*, 1984).

#### LEAF ANATOMY

The leaf can reach 3,2 mm width; cross sections reveal a highly cutinized epidermis, one layer of palisade cells and little parenchyma at the centre, where 10-11 vascular bundles can be seen (Fig. 3a). The leaf blade has a white stripe — with absence of stomata — on the centre of the upper surface. The margins carry one-cell hairs, about 40 per cm, also cutinized (Fig. 3b, c). Leaves from the Greek samples were compared to those from the Gussone *typus* (Fig. 4) and were seen to be practically indistinguishable from them.

#### DISCUSSION AND TYPIFICATION

*Ornithogalum collinum* was described by GUSSONE (1825) with the following diagnosis: «*omnino simile O. nano; sed folia ad margines ciliata*». There is no indication of samples; an asterisk indicates the plant as native to Sicily «*Asteriscus plantas Siciliae indigenas indicat*». It is worth remembering that GUSSONE (1825) refers to «*O. nanum*

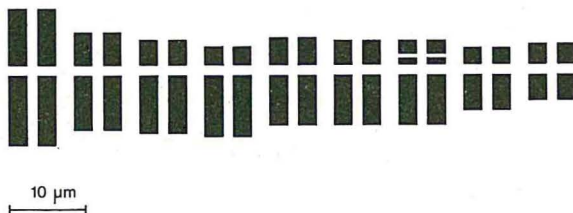


Fig. 2 - Idiogram of the chromosome complement of *Ornithogalum collinum* Guss.,  $2n=18$ .

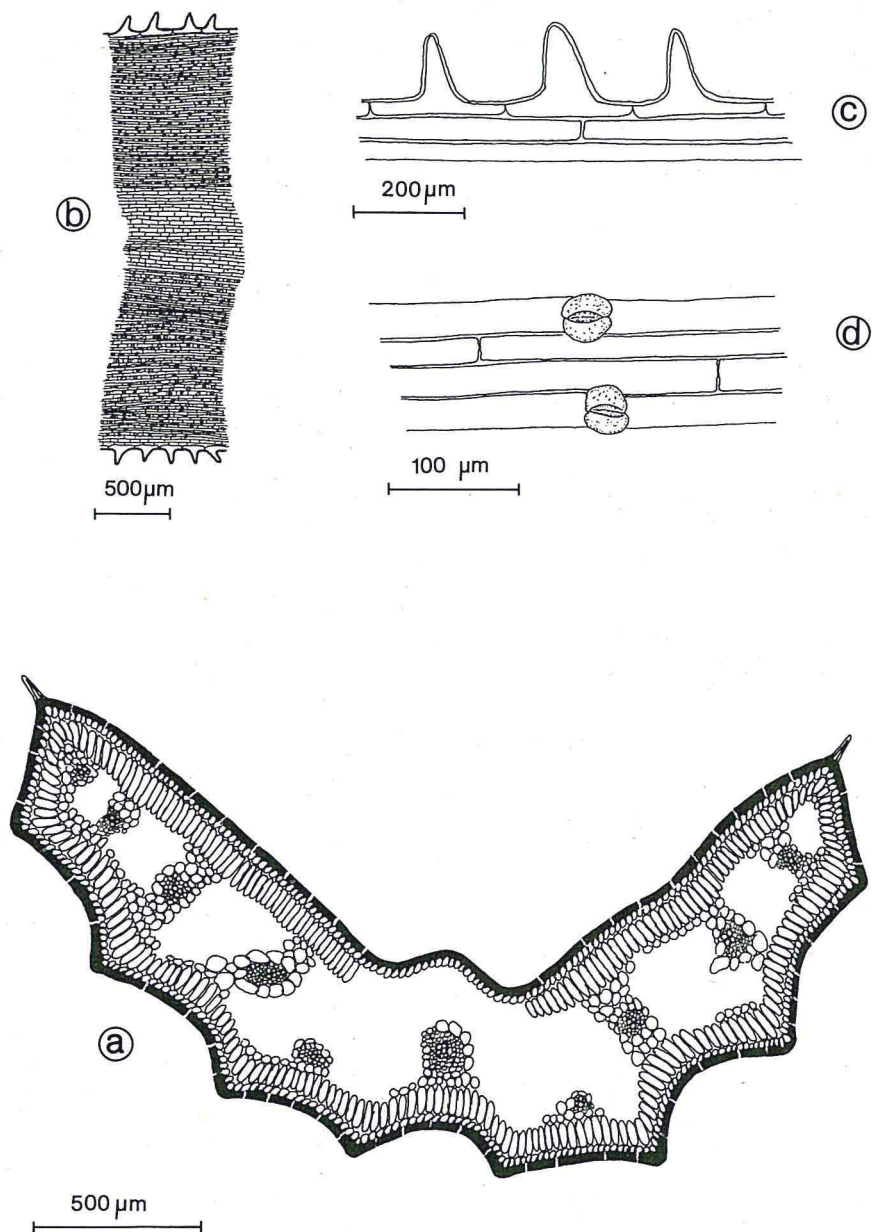


Fig. 3 - *Ornithogalum collinum* Guss. (25/1977, cult. H.B.P.). a) Transection of the leaf; b) Surface view of abaxial foliar epidermis; c) Hairs at the margin; d) Stomata.



Sibth.» (now *O. sibthorpii* Greuter, native — according to ZAHARIADI (1980) — to the Balkan peninsula, SE Rumania and the Aegean), which also carries an asterisk, therefore wrongly considered native to Sicily. Two years later GUSSONE (1827: 412) gives a more precise description of *O. collinum* and its habitat: «*O. bulbo solido simplici, foliis linearibus (1-lin. latis) canaliculatis linea alba notatis margine ciliatis scapo longioribus, pedunculis corymbosis, bracteis scariosis, petalis lineari-oblongis marginatis. In collibus herbidis submontosis; Roccapalomba, Alia*». GUSSONE (1827: 413) also points out differences from *O. exscapum* Ten., which *O. nanum* previously mentioned is to be referred to. «*Ideoque O. nanum Cat. H.R. Bocc. p. 45 ad hoc spectat*». Later (GUSSONE 1842: 402), the description of *O. collinum* was further added to; it was also pointed out that there was no iconography (\*) of the plant, contrary to what had been stated in the past (GUSSONE 1827: 412). It had proved impossible, during revision of *Ornithogalum* material in Italian Herbaria (TORNADORE and GARBARI, 1979), to find a sample identifiable as *typus* of *O. collinum* Guss. This year, following a suggestion from Prof. E. Nardi (Florence) and thanks to the kindness of Prof. V. La Valva (Naples), several samples of *O. collinum* in Gussone's «Erbario Siculo» at Naples, until recently impossible to examine, were found. We selected the sample from Alia, a town some 70 Km from Palermo, near Roccapalomba, as lectotype, since these two places are to be considered as «*loci classici*» mentioned by Gussone when describing the species. Protologue and later enlargements (GUSSONE 1825, 1827, 1842) agree with the *exsiccatum* chosen (Fig. 4).

Once the nature of *O. collinum* Guss. was identified on the basis of the lectotype, it was possible to demonstrate that the samples from Greece used for this present study are definitely to be assigned to this species (Fig. 5).

It may therefore be concluded that *Ornithogalum collinum*:

- is not a species endemic to Sicily, as PIGNATTI (1982) asserts;
- evidence obtained so far indicates that it is represented in Greece by diploid ( $2n=18$ ) biotypes;
- it should probably be considered as a separate species from *O. gussonei* Ten. s. str. (= *O. tenuifolium* Guss.), since the latter has a basic chromosome number  $n=7$  (TORNADORE and GARBARI,

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(\*) Information from Palermo tells us that Gussone never accomplished an iconography of Sicilian flora.

1979) and leaf characteristics which are always different from those of *O. collinum*, which has striped leaves with hairs along the margins.

**Ornithogalum collinum** Guss., Index Sem. an. 1825 quae ab H.R. Boccadifalco... exhibentur, p. 8 (1825). **TYPUS** (Lectotyp. here



Fig. 4 - The drawing (courtesy Miss Lucia Amadei) of the lectotype specimen of *Ornithogalum collinum* Guss. (NAP-GUSS.!) and of the hairy margin of the leaf.

designated): Alia, Aprile (NAP-GUSS!). Iso. in BOLO (BERTOL.), not found (probably lost).

A drawing of the type-specimen on Fig. 4.

### Specimina visa

Alia, Aprile [Sicily], *s.d.* Gussone, lectotypus (NAP); Alia (Sicilia), leg. Gussone [*manu* L. Grande, according to La Valva] (NAP); *O. collinum* n. 55, *s.d.*, *s. coll.* (NAP); Catania, n. 8, *Cosentini*, 1830 (NAP); Castelbuono [Sicily] al Roccazzo, *Minà* n. 33 (NAP); Paternò [Sicily], 1845 [? illegible handwriting] *Tornabene* (NAP); S. Anastasia, Castelbuono [Sicily], *Minà* (*det.* Lojacono), *s.d.* (PAL); Bagheria [Palermo], marzo 1827, Herb. *Todaro* (PAL); Ciaculli [Palermo], marzo, *s. coll.* (PAL); In collibus Ciaculli [Palermo], 1881, *Todaro* (FI); Mistretta [Messina], 2.VI.1886, *Seguenza* (FI); Palermo, maggio 1849, *Tineo* (FI); Palermo, 1844, *Meli* (FI); Mandanici [Messina], 12.V.1872, *Aiuti* (FI); Pennino di S. Lorenzo nei colli aridi, Vittoria (Ragusa), 17.V.1873, *Aiuti* (FI); vicino la Mandra del Roccazzo, pascoli, «folia sunt breviter ciliata», 10.V.1841, *Minà* (PAL).

### Specimina excludenda

Aprili, in collibus herbosis (Herb. *Todaro*) (PAL); Aprili, Madonie, *Minà* (*O. umbellatum*, Lojac.) (PAL); Presso S. Isidoro [illeg. handwr.] (PAL); In pascuis petrosis gypsaceis Villafrate, *Lojacono* (PAL).

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### REFERENCES

- COUDERC H., GORENFLOT R., MORET J., SIAMI A. (1984) - Variation chromosomique et biosystématique chez plusieurs espèces d'«*Ornithogalum*» L. *Webbia*, **38**: 671-679.
- GARBARI F., TORNADORE N. (1971) - The genus *Ornithogalum* L. (Liliaceae). I. *Ornithogalum kochii* Parl.: morphological and caryotypical analysis. *Atti Soc. Tosc. Sci. Nat., Mem.*, Ser. B, **77**: 101-111.

- GUSSONE J. (1825) - Index Seminum anni 1825 quae ab H.R. Boccadifalco... exhibentur, 12 pp.
- GUSSONE J. (1827) - Florae Siculae Prodrumus, 411-415. Neapoli.
- GUSSONE J. (1842) - Florae Siculae Synopsis, 400-405. Neapoli.
- LEVAN A., FREDGA K., SANDBERG A.A. (1964) - Nomenclature for centromeric position on chromosomes. *Hereditas*, **52**: 201-220.
- PIGNATTI S. (1982) - Flora d'Italia, **3**: 368-373.
- RAAMSDONK L.W.D. VAN (1982) - Biosystematic studies on the umbellatum-angustifolium complex in the genus *Ornithogalum* L. *Proceedings Roy. Neth. Acad. Sci.*, ser. C, **85** (4): 563-574.
- STEARNS W.T. (1983) - The Linnaean species of *Ornithogalum* (Liliaceae). *Ann. Mus. Goulandris*, **6**: 139-170.
- STEARNS W.T. (1984) - Homonyms in the genus *Ornithogalum* L. (Liliaceae). *Botanica Helvetica*, **94** (1): 189-197.
- TORNADORE N., GARBARI F. (1979) - Il genere *Ornithogalum* L. (Liliaceae) in Italia. 3. Contributo alla revisione citotassonomica. *Webbia*, **33** (2): 379-423.
- ZAHARIADI C.A. (1980) - *Ornithogalum* L. *Flora Europaea*, **5**: 35-40.
- ZAHARIADI C.A. (1983) - Quelques taxons nouveaux du Genre *Ornithogalum* (Liliaceae) récemment trouvés dans les Balkans et dans le Proche-Orient. *Ann. Mus. Goulandris*, **6**: 171-197.

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#### ADDED IN PROOFS

While this note was at the printer, two papers appeared: In «VAN RAAMSDONK L., *Biosystematic studies on the umbellatum-angustifolium complex in the Genus Ornithogalum* L. (Utrecht, 1984)», *O. collinum* (material from Yugoslavia) is described as tetraploid ( $2n=36$ ); In: «PAVONE P., *Osservazioni cariologiche su Ornithogalum collinum* Guss., *endemismo siculo*, Giorn. Bot. Ital. **118** (1-2), Suppl. 2: 163 (1984)», this species (from three localities in Sicily) is considered diploid ( $2n=18$ ) but shows a different karyotype formula from the one described in our note.