

# Studies on Indian Endogonaceae. II. The Genus *Glomus*

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## Introduction

During our investigations on the taxonomy and ecology of the Indian Endogonaceae several forms were isolated. Of these, 5 species of *Glomus* are described here, including the new species *Glomus reticulatus*. In addition to these we have already described three other species of *Glomus*, namely, *G. macrocarpus*, *G. fuegianus* and *G. fasciculatus* (RIKHY & MUKERJI, 1974). The present forms have been isolated from soil samples collected from different parts of India. The wet-sieving and decanting technique of GERDEMANN & NICOLSON (1963) was used for isolating the spores.

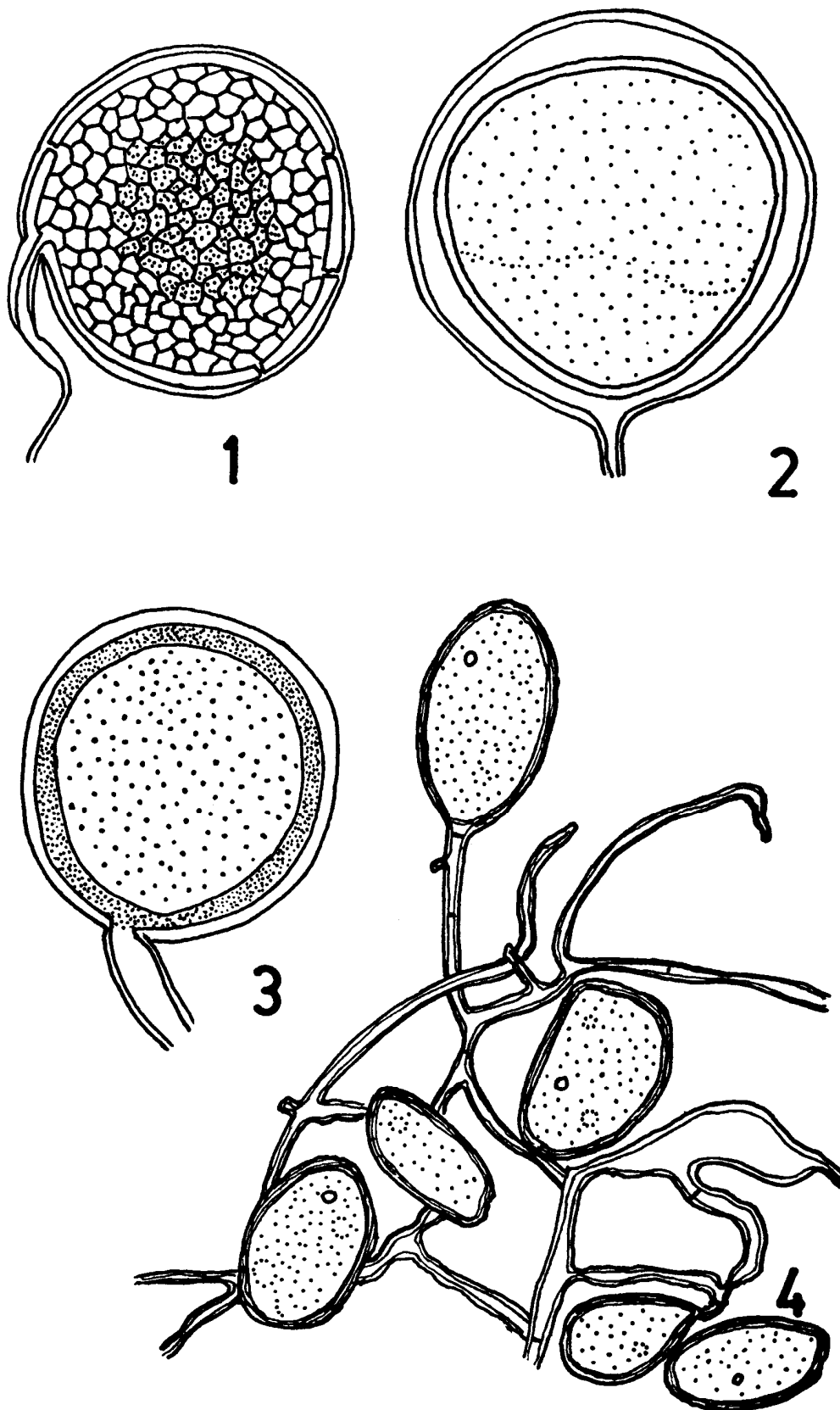
### 1. *Glomus reticulatus* BHATTACHARJEE et MUKERJI, sp. nov. — Fig. 1

Chlamydo-sporis globosis, atro-brunneo-nigris, 130—170  $\mu\text{m}$ . Sporae tunica 10—15  $\mu\text{m}$ , clare distincta in tunica interna et externa. Tunica externa 5—7  $\mu\text{m}$  diam., bistrata et fissura. Tunica interna reticulata. Hyphae subtendentes, 8—10  $\mu\text{m}$  diam., infundibuliformes, poris apertis instructae.

Typus ex solo Bangalore, Indiae, leg. M. BHATTACHARJEE, 2. XII. 1977, DU/KB/484.

Chlamydo-spores borne freely and singly in the soil, not known to occur in sporocarps; dark brownish black, globose, 130—170  $\mu\text{m}$  in diameter; wall 10—15  $\mu\text{m}$  thick, clearly differentiated into an outer and inner wall. Outer wall 5—7  $\mu\text{m}$  thick, two layered and fissured, outermost layer 1—2  $\mu\text{m}$  thick and inner layer 4—5  $\mu\text{m}$  thick, inner wall with regular geometric reticulate markings (5—10  $\mu\text{m}$  apart) on its outer surface. Subtending hypha funnel shaped, 8—10  $\mu\text{m}$  wide at the point of attachment, tapering to upto 5  $\mu\text{m}$  after a distance of 50—80  $\mu\text{m}$ , pore open. Wall thickening extends down the subtending hypha to a distance of 40  $\mu\text{m}$ .

This form was isolated from soil samples collected from Bangalore on 2nd December 1977. The specific epithet is indicating the reticulate inner wall of the chamydo-spores.



Figs. 1–4. Chlamydospores of: 1. *Glomus reticulatus*  $\times 340$ . — 2. *Glomus caledonius*  $\times 420$ . — 3. *Glomus invermairii*  $\times 350$ . — 4. *Glomus fulvus*  $\times 40$

2. *Glomus caledonium* (NICOL. & GERD.) TRAPPE & GERDEMANN, Mycologia Memoir 5: 56. 1974. — Fig. 2

Bas.: *Endogone macrocarpa* var. *caledonia* NICOL. & GERD., Mycologia 60: 318. 1968.

Chlamydospores borne freely and singly in the soil, also known to occur in sporocarps; dull yellowishbrown, globose, 180—220  $\mu\text{m}$  in diameter; wall upto 17  $\mu\text{m}$  thick, composed of a thick easily separable hyaline outer layer 5—8  $\mu\text{m}$  thick and a brown inner layer up to 9  $\mu\text{m}$  thick. Outer wall extends down the subtending hypha to form a loose covering over it. Hyphal attachment simple, 5—7  $\mu\text{m}$  diameter; spore contents separated from the attached hypha by a thin curved septum which forms at the neck of the subtending hypha.

This form was isolated from soil samples collected from Srinagar, Kashmir, 20th October, 1976. The present isolate does not differ significantly from the type description of GERDEMANN & TRAPPE (1974).

3. *Glomus fulvus* (BERK. & BROOME) TRAPPE & GERDEMANN, Mycologia Memoir 5: 59. 1974. — Fig. 4

Bas.: *Paurocotylis fulva* BERK. & BROOME, J. Linn. Soc. London (Bot.) 14: 137. 1875.

Syn.: *Endogone fulva* (BERK. & BROOME) Pat., Bull. Soc. Mycol. France 19: 341. 1903.

*Endogone moelleri* HENNINGS, Hedwigia 36: 211. 1879.

*Endogone lignicola* PAT., Bull. Soc. Mycol. France 18: 183. 1902.

Chlamydospores formed in loose sporocarps up to 1 mm across. Peridium absent. Chlamydospores dull brown, sub-globose, oblong, elliptical or oval, 140 $\times$ 50—110 $\times$ 150  $\mu\text{m}$ ; wall smooth, 4—6  $\mu\text{m}$  thick, may be laminate. Hyphal attachment simple; pore often septate. Hyphae extensively branched, thick, 10—20  $\mu\text{m}$  diameter, sometimes even 30  $\mu\text{m}$ ; septate at maturity and loosely interwoven. Spores filled with dark granular contents and oil globules.

This form was found to be of frequent occurrence in soils of Bangalore and Belgaum, collected on 7th and 20th January 1977. It is relatively common in tropical America, Ceylon and the South Pacific area (ZYCHA et al., 1969).

4. *Glomus invermaius* HALL, Trans. Br. mycol. Soc. 68 (3): 341—356. 1977. — Fig. 3

Chlamydospores occur freely and singly in the soil, previously reported to occur only in sporocarps, light brown-dark brown, globose, 70—120  $\mu\text{m}$  diameter; wall two inseparable layers. Outer layer colorless and brittle, 5—6.5  $\mu\text{m}$  thick, inner one dark brown, 3—4.6  $\mu\text{m}$  thick. Outer wall extends along subtending hypha for a distance of upto 50  $\mu\text{m}$ . Subtending hypha 8.5—9.5  $\mu\text{m}$  thick, pinched in at point of attachment. Septum absent. Pore occluded.

This is the second report of *G. invermaius* after its discovery (HALL, 1977). It was isolated from soil collected from Bangalore on 2nd December 1977. This isolate differs from the type description of HALL (1977) mainly in that the chlamydospores were found freely and singly in the soil and not in loose naked sporocarps. It is possible that the spores get detached during the wet-sieving and decanting process.

5. *Glomus microcarpus* TUL. & TUL., Giorn. Bot. Ital. Pt. I, 2: 63. 1845.

Syn.: *Endogone microcarpa* (TUL. & TUL.) TUL. & TUL., Fungi Hypogaei, p. 182. 1851.

*Endogone neglecta* RODWAY, Proc. Roy. Soc. Tasmania, 1917: 107.

Chlamydospores borne freely in the soil, in loose aggregations or compact clusters, also known to occur in sporocarps. Sporocarp up to 1 mm across with a peridium of interwoven hyphae. Chlamydospores white, globose to subglobose, 18—25  $\mu\text{m}$  in diameter; wall upto 6  $\mu\text{m}$  thick, two layered, outer layer roughened or smooth, inner layer smooth. Hyphal attachment simple, pore opening occluded at maturity.

This form was of frequent occurrence in soils collected from Bangalore and Delhi in December 1977 and February 1979.

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