Short Communication

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SCLEROCYSTIS TAIWANENSIS WU & CHEN - FIRST RECORD IN INDIA

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Morphological features of sporocarps and spores of *Sclerocystis taiwanensis* Wu & Chen collected from Western Ghats, Southern India are illustrated and described. This vesicular - arbuscular mycorrhizal fungus has so far not been reported in India. *S. taiwanensis* was associated with *Asparagus racemosus, Cymbopogon caesius, Sanseviera roxburghiana* and an unknown grass. The sporocarp density ranged from 14 to 24 per 50 gram of dry soil.

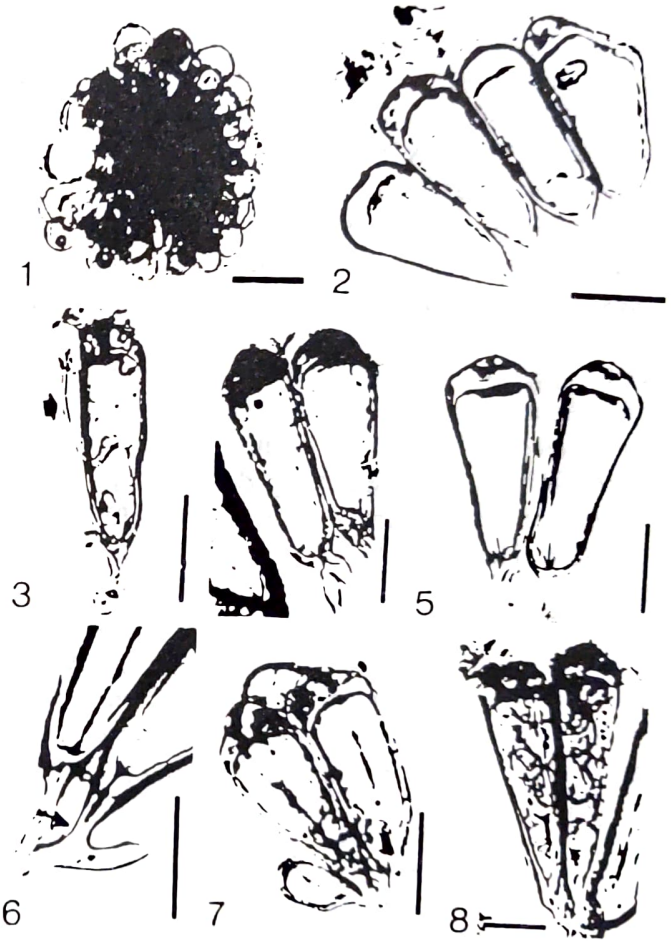
Key Words : VAM fungus; *S. taiwanensis;* Glomales.

The vesicular - arbuscular mycorrhizal (VAM) fungus *Sclerocystis taiwanensis,* has been reported from Taiwan (Wu and Chen, 1987). Since then this species is known only from Korea and Phillipines (Wu, 1993). The aim of this paper is to describe the morphological features of *S. taiwanensis* from India, a new record and to characterize the wide geographical distribution of this species.

Soil samples were collected from a depth of 5 to 30 cm from Maruthamalai hills, located at 11°04'N and 76°93'E, an affshoot of Western Ghats. The spores and sporocarps were extracted by wet-sieving and decanting technique (Gerdemann and Nicolson, 1963) and mounted in polyvinyl alcohol/lactophenol (PVL) and Melzer's reagent (Morton, 1986) and examined. Spore area was calculated according to Wu (1993). Voucher specimens preserved in PVL have been deposited at The Centre for mycorrhizal Culture Collection (CMCC), Tata Energy Research Institute, New Delhi, India (Voucher No. CMCS 110).

Sclerocystis taiwanensis Wu & Chen, *Trans. Mycol. Soc. Rep. China* 2: 73, 1987.

Sporocarps brown to dark brown, globose to subglobose (200-) 231.3 (-340) X (190-) 231.3 (-230) µm with chlamydospores arranged in a single tightly packed layer around the central plexus of hyphae (Fig. 1). Peridium absent chlamydospores clavate to cylindroclavate, obovate to irregular, yellowish brown to olive brown (30-) 61.5 (-80) x (14-) 23.3 (-28) µm (Fig. 2,9). Spore wall two layered with a hyaline outer layer ca. 0.5-1.5 µm and a laminated inner wall (5-) 9.6 (-12) µm thick at the apex and (2-) 3.2 (-4) µm thick at the base (Fig. 3). Subtending hyphae 1



Figures 1-8 Micrographs of *Sclerocystis taiwanensis.* Fig. 1. Sporocarp (bar = 100 µm). Fig. 2. Chlamydospores (bar = 50 µm). Fig. 3. Chlamydospore with separable outer wall (arrow) (bar = 40 µm). Fig. 4. Chlamydospore with two hyphal attachments (bar = 40 µm). Fig. 5. Septum at the spore base (arrows) (bar = 50 µm). Fig. 6. Septum in the subtending hyphae (arrow) (bar = 20 µm). Fig. 7. Part of sporocarp showing asynchronous spore development (bar = 50 µm). Fig. 8. Parasitism of chlamydospores. Note the monilioid hyphae within chlamydospores (bar = 20 µm).

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to 2 (2-) 3.3 (-4) µm and (3-) 4.2 (-6) µm at the point of attachment (Fig. 4). Spore contents delimited by a septum present either at the spore base (Fig. 5) or in the subtending hyphae (Fig. 6). Reaction of wall layers to Melzer's reagent not distinctive. Branching of sporophores in the form of membranous vesicles is commonly found at the spore base which is delimited by a septum. Sporocarps are often associated with one to three monohyphal stalks and spore development is asynchronous (Fig. 7). Chlamydospores often infected by other soil microorganisms (Fig. 8).

The specimens of *S. taiwanensis* collected in the present investigation fit well into the description of Wu and Chen (1989). The main exceptions are the differences in the dimensions of spores [(40-85 (-105) x (17.5-) 22-42.5 (-55) µm in *S. taiwanensis* from Taiwan *Vs* 30-80 X 14-28 µm in the present observation] and apical wall thickness [(4-) 7.5-22.5 (-25) µm *Vs* (5-) 9.6 (-12)]. The spore area frequency of *S. taiwanensis* of the present study indicates that the present form produces smaller spores (1500-2000 µm^2) compared to those from Taiwan (2000-3000 µm^2). Plant species associated with *S. taiwanensis* were *Asparagus recemosus* L., *Cymbopogon caesius* Stapf., *Sanseviera roxburghiana* Schultes & Schultes and an unknown grass. The sporocarp density in the rhizosphere soils ranged from 14 to 24 (av. 19) in 50 g dry soil. The other VAM fungi occurring with *S. taiwanensis* were *Acaulospora scrobiculata* Trappe, *Glomus geosporum* (Nicol. & Gerd.) Walker, and *Scutellospora heterogama* (Nicol. & Gerd.) Walker & Sanders. The chemical properties of the soil in which *S. taiwanensis* was present were 0.10% nitrogen, 0.10% phosphorus, 0.78% potassium and 2.8% organic matter.

S. taiwanensis resembles *S. clavispora* Trappe and *S. microcarpa* Iqbal & Bushra in lacking a peridium and spore walls thickest at the apex. Almeida and Schenck (1990) considered *S. microcarpa* to be a synonym of *S. clavispora*. Wu (1993) reported the occurrence of smaller sporocarps of *S. clavispora* containing spores with spore area of 2000-3000 µm^2 along with larger sporocarps. However, the feature that distinguishes *S. taiwanensis* from the morphologically allied species is the presence of a hyaline outer wall.

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