

TAXONOMY OF NEW AND INTERESTING POWDERY MILDEWS (ERYSIPHALES) FROM ANDHRA PRADESH

G. BAGYANARAYANA, U. SRINIVASULU AND P. RAMESH

Department of Botany, University College of Science, Osmania University, Hyderabad-500 007. (A.P)

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A systematic study of the powdery mildews (Erysiphales) of Andhra Pradesh is made. Five species belonging to three different genera of the Erysiphales are recorded in this paper. *Oidium gymnosporii* and *O. pachygonii* are described as new taxa. *Microsphaera russellii*, *Sphaerotheca papaveris* and *Oidium schmiedeknechtii* are new records to India.

Key Words: Taxonomy-Powdery mildews (Erysiphales) Andhra Pradesh.

Powdery mildews belonging to the family Erysiphaceae of the order Erysiphales are biotrophic parasites of Angiospermic plants. Systematic studies on Powdery mildews from India in general and from Andhra Pradesh in particular are meagre. The earliest works on powdery mildews from Andhra Pradesh was made by Salam and Rao (1958) and Rao (1961, 1962). After a gap of nearly two decades from 1980 onwards, the study of powdery mildews has been restarted from Andhra Pradesh and several papers were published by Ramachar & Bagyanarayana (1980), Bagyanarayana & Ramachar (1983), Bagyanarayana & Braun (1986), Bagyanarayana *et al.* (1988), Bagyanarayana (1989), Bagyanarayana and Jagadeswar (1991) and Bagyanarayana *et al.* (1996).

During a survey of powdery mildews from Andhra Pradesh many powdery mildews on various angiospermic hosts were collected. The identification of the powdery mildew taxa was done based on the taxonomic criteria and morphological characters enlisted by Boeswinkel (1980) and Braun (1987). Fungi of India manuals by Butler & Bisby rev. by Vasudeva (1960), Rangaswamy (1970), Bilgrami *et al.* (1979, 1981, 1991) and Mukerji & Bhasin (1986) were regularly referred. Of the 5 taxa two are new to science, three are new to India. All the specimens are deposited in the Mycological Herbarium, University College of Science, Osmania University, and the type specimens in the Herbarium Cryptogamiae Indiae Orientalis (HCIO), New Delhi.

Oidium gymnosporii sp. nov. (Fig. 1)

Maculae infectus foliosis, epiphyllis, mycelio hyalino, celeriter effusae; hyphiis ramosis, 4.6-6.2

µm crassa, appressorio lobatis; conidiophora erecta, cylindraceis, 62-108.5x9.3-12.4 µm, cellulo basalis erecta 31-46.5x6.2-9.3 µm; conidio catenatis, cylindraceis, ellipsoideis-ovoideis, 21.7-31x9.3-18.6 µm, fibrosin bodies nulliis.

Infection spots on leaves, epiphyllous, mycelium hyaline, effused or in patches, branched, 4.6-6.2 µm wide, appressoria lobed: conidiophores erect, cylindrical 62-108.5x9.3-12.4 µm, foot-cells straight, 31-46.5x6.2-9.3 µm, foot cell followed by 1-5 shorter cells, conidia in chains, cylindrical, ellipsoid-ovoid, 21.7-31.0x9.3-18.6 µm, fibrosin bodies absent, germ tube with lobed appressorium at the tip.

On the living leaves of *Gymnosporia montana* Benth. (*Maytenus montana*, Celastraceae), Talakona forest, Chittoor dist, A.P. Feb. 1997. U. Srinivasulu, P.G.C.S.S. Myc. Herb. Ery-98, HCIO.

The host *Gymnosporia montana* belongs to the family Celastraceae. As per Braun (1987) and Fungi of India manuals by Bilgrami *et al.* (1979), Mukerji & Jayanthi-Bhasin (1986), Butler & Bisby (1960), Sarbhoy *et al.* (1977-81), Rangaswamy *et al.* (1970), so far there is no report of any *Oidium* species on the host genus *Gymnosporia* of the host family Celastraceae. Therefore this is being reported as a new species.

Oidium pachygonii sp. nov. (Fig.2)

Maculae infectus amphigeniis, celeriter effusae, mycelio, hyalino, erecta, cylindraceis, 1-4 septatis, 62-86.8x6.2-9.3 µm; conidio catenatis, cylindraceis, ellipsoideis-ovoidis, 21.7-34x9.3-12.4 µm fibrosiin bodies nulliis.

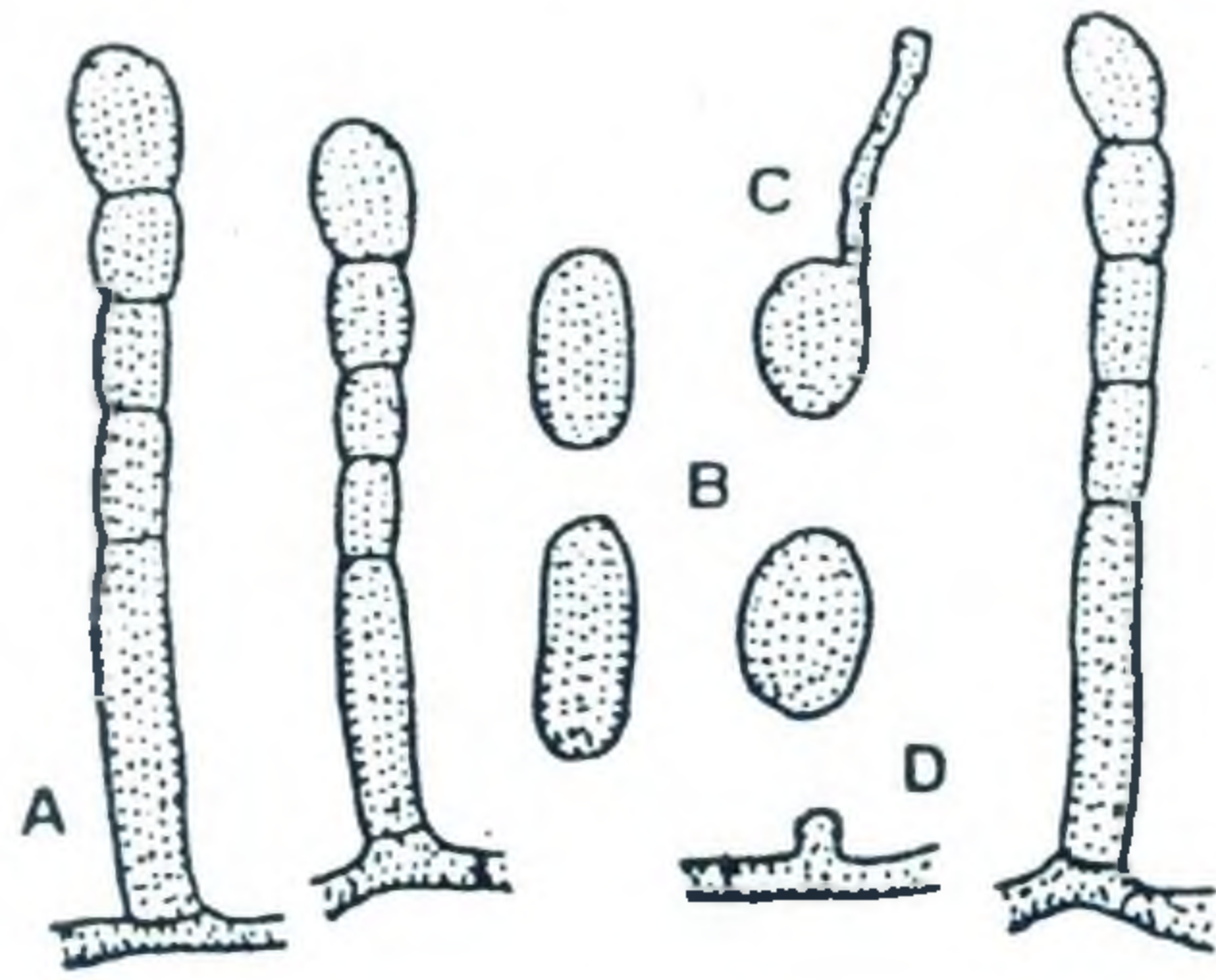


Fig - 1 | 30 μm

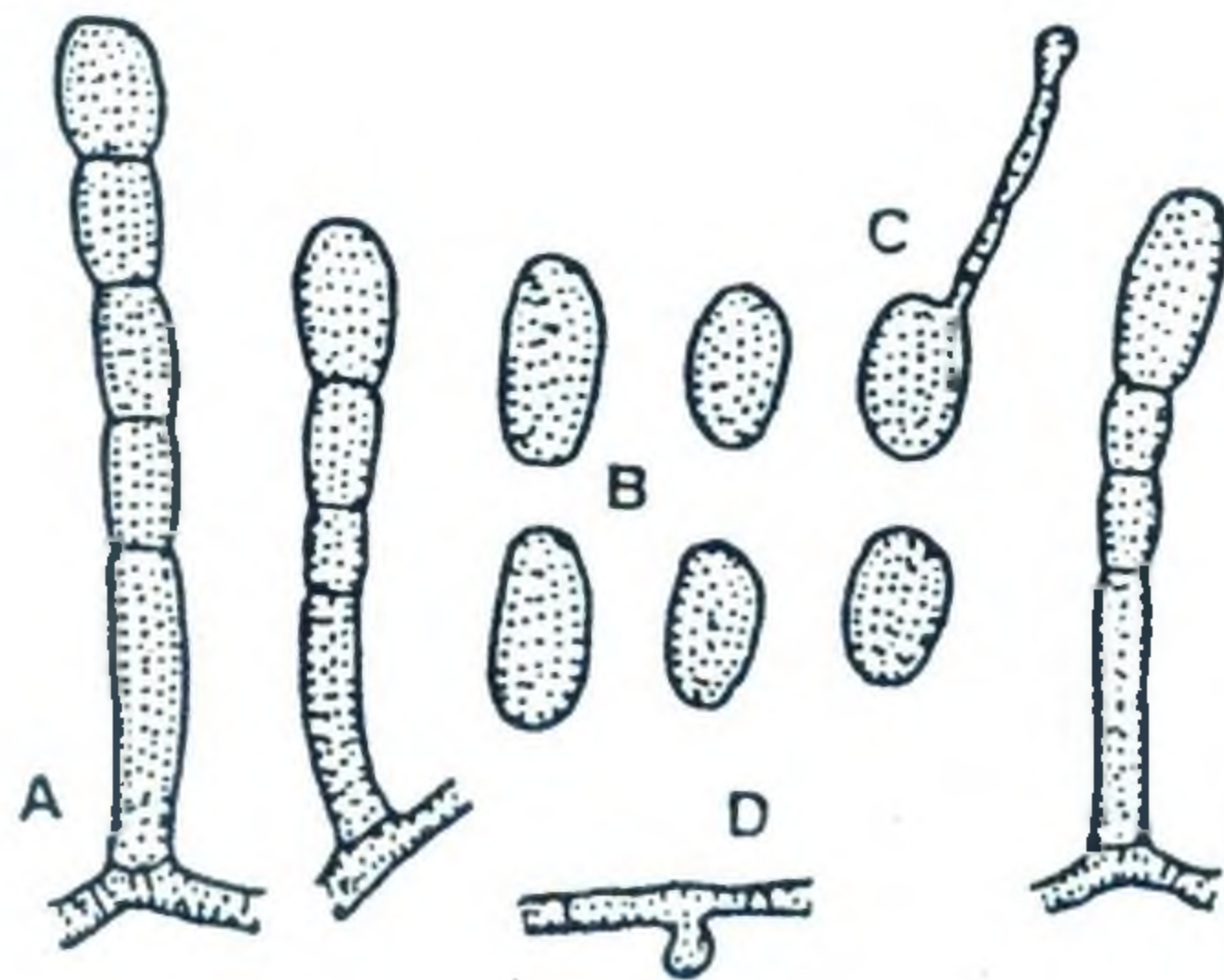


Fig - 2 | 30 μm

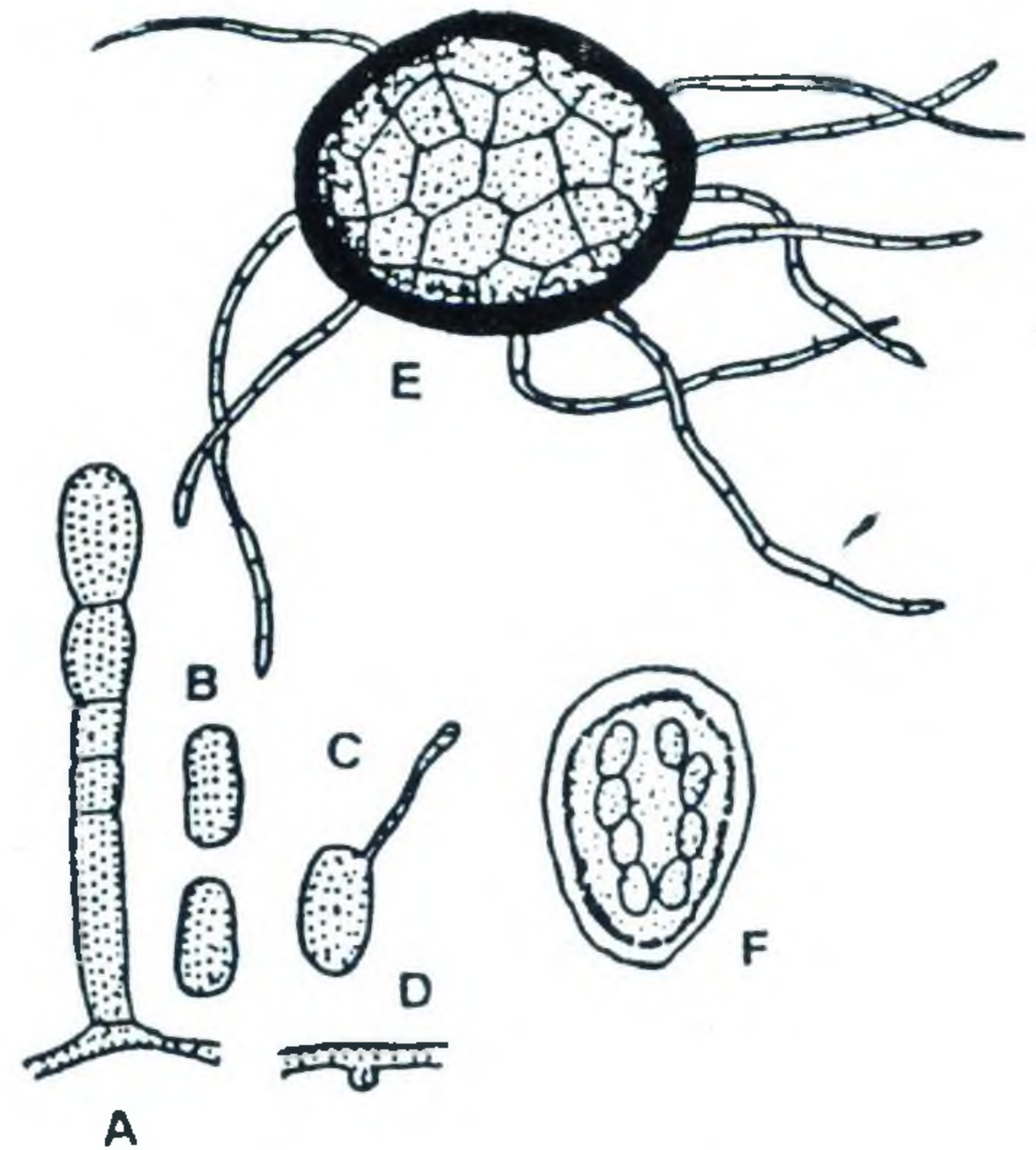


Fig - 4 | 30 μm

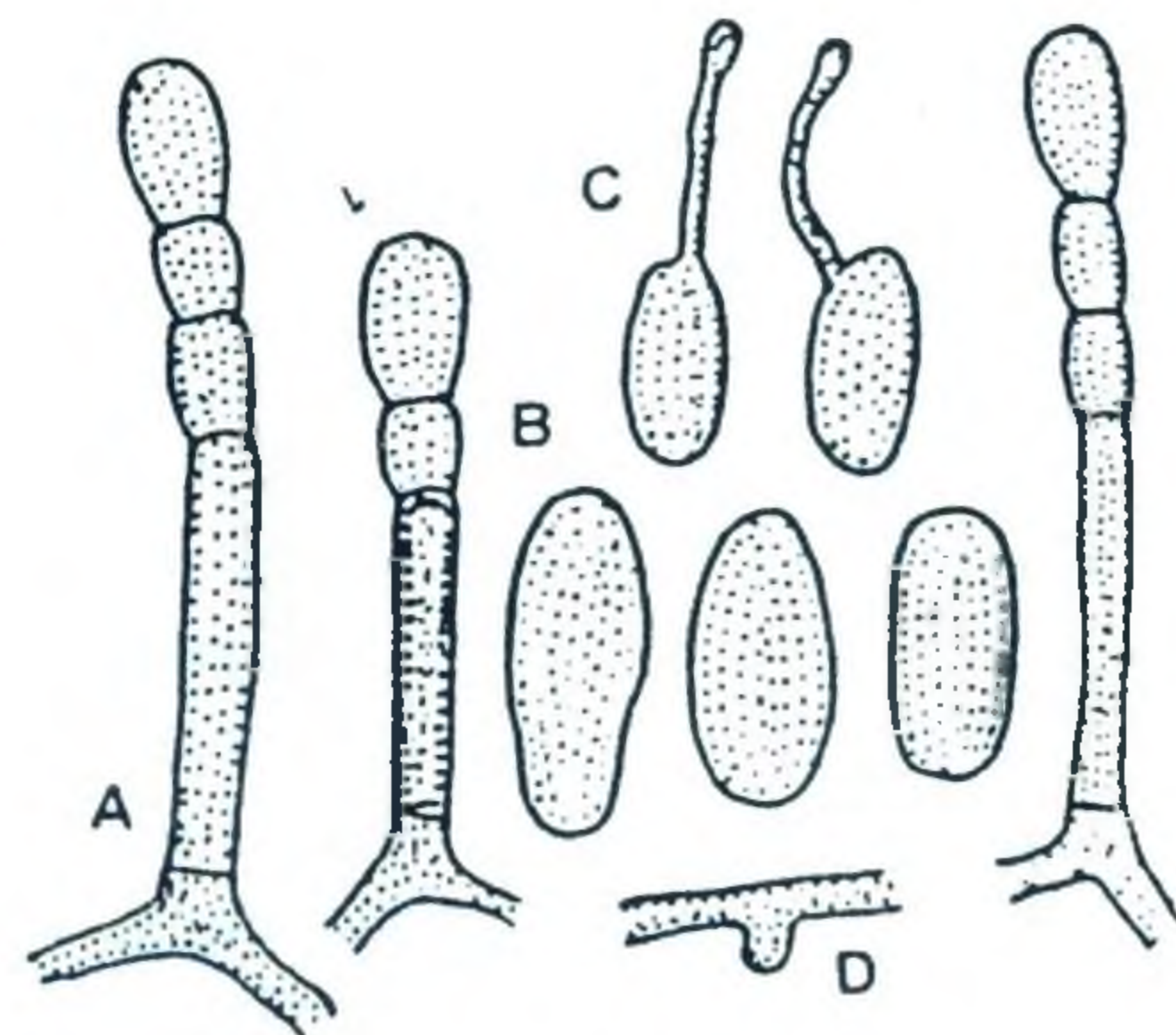
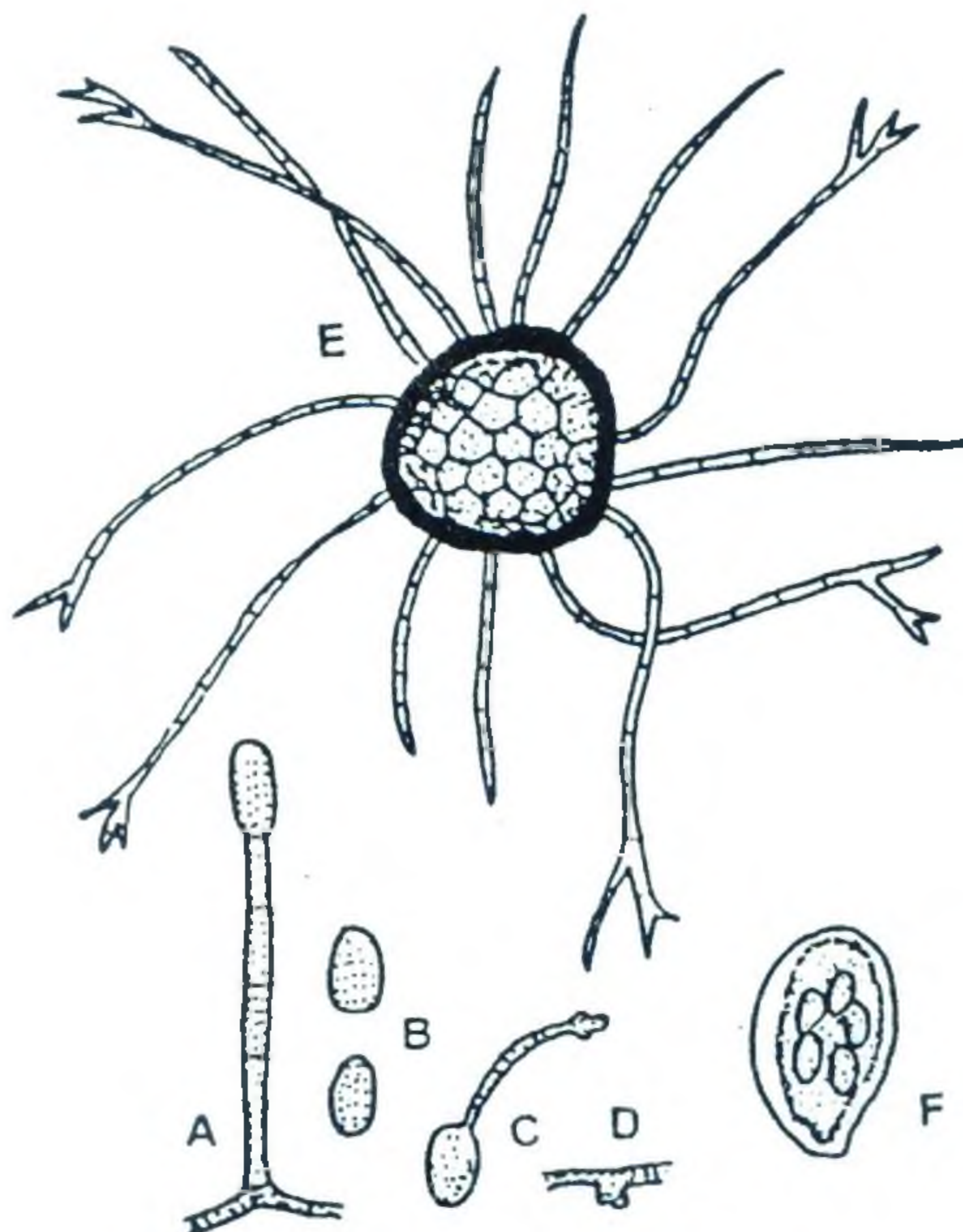


Fig - 5 | 30 μm

Figures 1-5. Fig-1: *Oidium gymnosporii* sp. nov., Fig-2: *Oidium pachygonii* sp. nov., Fig-3: *Microsphaera russellii* Clint, Fig-4: *Sphaerotheca papaveris* Simonian, Fig-5: *Oidium schmiedeknechtii* U. Braun
 (A -Conidiophore bearing conida with basal mycelium. B - Conidia. C - Germinating conidia with germ tube. D - Mycelial hypahe with appressoria. E - Cleistothecium with appendages. F - Ascus with ascospores)

Infection spots on leaves, amphigenous, effused or in patches, mycelium hyaline, hyphae branched, septate, 4.5-6.2 μm wide, appressoria lobed; conidiophores erect, cylindrical, 1-4 septate, 62-86.8x6.2-9.3 μm , conidia in chains, cylindrical, ellipsoid-ovoid, 21.7-34x9.3-12.4 μm , fibrosin bodies absent, germ tube with lobed appressorium at the tip.

On the living leaves of *Pachygone ovata* Miers. (Menispermaceae), Sri Tirumala hills, Tirupathi, Chittoor dist, A.P. 22 Jan. 1995 G. Bagyanarayana, P.G.C.S.S. Myc. Herb. Ery-91, HClO.

The host genus *Pachygone ovata*, belongs to the family *Menispermaceae*. As per Braun (1996 personal communication) the *Oidium* species on *Pachygone* belongs to the *Psuedooidium* type. Further, according to Uwe Braun (1987) and Fungi of India manuals by Bilgrami *et al.* (1979) Mukerji & Jayanthi Bhasin (1986), Butler & Bisby (1960), Sarbhoy *et al.* (1977-81), Rangaswamy *et al.* (1970) so far there is no report of any *Oidium* species on the host genus *Pachygone* of the host family *Menispermaceae*. Therefore this is being reported as a new species.

Microsphaera russellii Clint, in Peck, Rep. N.Y.Stat. Mus 26: 80. 1874 (Fig.3)

= *Trichocladia russellii* (Clint.) Jaczewski, Karm. Oprod. grib 11,299, Leningard 1927.

Anamorph = *Oidium oxalidis* Mc Alp., Roy. Soc. Victoria, 219. 1894.

= *Acrosporium oxalidis* (Mc. Alp.) Subramanian, Hypomycetes, New Delhi, 838. 1971.

Infection spots on leaves, amphigenous, effused or in patches, evanescent to subpersistent, hyaline, hyphae 3.1-6.2 μm wide, appressoria multilobed; conidiophores erect, slender, 3-4 celled, 46.5-148.6x4.6-9.3 μm , foot cell is the longest cell, 24.8-58.9x4.6-9.3 μm , foot cell cylindrical, conidia formed singly, ellipsoid-ovoid, 24.8-37.2x12.4-18.6 μm , germ tube is cichoracearum type.

Cleistothecia scattered to gregarious, 77.5-114.7 μm in diam, cells irregularly shaped, 8-22.5 μm diam, appendages about 5-15, equatorially or subequatorially arising, long and flexous, 2-7 times as long as the cleistothecial diam, often mycelioid, occasionally slightly thicker at the base, smooth to faintly rough

below, septate, coloured throughout when mature, brown, 5-9 μm wide, apex 1-4 times dichotomously branched, tips straight, asci 4-10, stalked, 37.2-56.8x21.7-34.1 μm , ascospores 3-5, ellipsoid-ovoid, 12.4-18.6x9.3-12.4 μm .

On the living leaves of *Oxalis corniculata* Linn, (Oxalidaceae), Horsely hills, Chittoor dist., A.P. 12th Feb., 1994. U. Srinivasulu, P.G.C.S.S. Myc. Herb. Ery-65.

Microsphaera russellii was first reported on the host genus *Oxalis corniculata* from North America in the year 1874. So far there is no report of *Microsphaera russellii* from India. Therefore this is being reported for the first time from India.

The cleistothecia are covered with mycelioid appendages which show dichotomous branching towards their apex. Usually 6-8 asci are present in the cleistothecia.

Sphaerotheca papaveris Simonian, Mikol. iFtop. 18(6): 465. 1984.

= *Sphaerotheca macularis* f. *papaveris* Simonian, Tr. BIN AN Arm. SSR 13: 151.1962. (Fig. 4).

Infection spots on leaves, amphigenous, dense, covering the entire lamina, white, evanescent to persistent, hyphae branched, septate, 3.1-6.2 μm wide, appressoria lobed; conidiophores erect, cylindrical 62-0-108.5x12.4 18.6 μm , foot-cell cylindrical, followed by two shorter cells, 49.6-58.9x6.2-9.3 μm ; conidia in chains, cylindrical-ellipsoid, 24.8-40.3x9.3-18.6 μm , fibrosin bodies present.

Cleistothecia scattered to subgregarious, 83.7-124.9 μm in diam, cells irregularly polygonal, 10.8-24.8 μm diam, appendages 8-10, in the lower half, mycelioid, simple, as long as the cleistothecial diam, some times longer, thin walled, smooth, septate, hyaline to coloured, 4.5-7.7 μm wide, ascus ellipsoid-ovoid, sessile, 65.1-80.6 μm , 8 spored, ellipsoid-subglobose, 15.5-21.7x10.8-12.4 μm .

On the living leaves of *Argemone mexicana* L. (Papaveraceae), Talakona forest, Chittoor dist, A.P. 25th Jan' 1995. U. Srinivasulu, P.G.C.S.S. Myc. Herb. Ery-71.

Simonian reported the powdery mildew fungus infecting the members of *Papaveraceae* as *Sphaerotheca macularis* f. *papaveris* in the year 1962.

But later he elevated this to the level of species and erected *Sphaerotheca papaveris* Simonian in the year 1984.

So far there is no report of *S. papaveris* from India. Therefore this is being reported as a new fungus record to India.

Oidium schmiedeknechtii U. Braun, Mycotaxon 25; 266. 1986. (Fig. 5)

Infection spots on leaves, epiphyllous, rarely hypophyllous, effused or in patches, mycelium hyaline, hyphae septate, branched, 4.5-6.2 µm wide, appressoria lobed; conidiophores erect, foot-cell cylindrical 31.1-43.4x7.7-9.3 µm, followed by 2-3 shorter cells, conidia single celled, cylindrical, ellipsoid-doliform, 34.1-46.5x12.4-21.7 µm, fibrosin bodies absent, germ tube with lobed apressorium at the tip.

On the living leaves of *Abutilon indicum* Linn. (Malvaceae), Talakona forest, Chittoor dist, A.P. 21st Jan., 1995, U. Srinivasulu, P.G.C.S.S. Myc. Herb. Ery-42.

Oidium schmiedeknechtii was first reported by Braun in the year 1986 from Taiwan. So far there is no report of this pathogen from India. Therefore this pathogen is being reported for the first time from India.

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