

## A NEW SPECIES OF MEMNONIELLA FROM INDIA

T. S. KESHAVA PRASAD, L. G. ASHA and D. J. BHAT

Department of Botany, Goa University, Goa-403 206, India.

## ABSTRACT

A new species of Hyphomycetes, *Memnoniella indica*, isolated from decaying leaves of an unidentified dicot plant from the forests of Andaman Islands, India, is described and illustrated. The fungus produces catenulate, globose, verruculose, dark brown conidia on monophialidic, discrete, hyaline conidiogenous cells and short, partly hyaline, determinate, branched, septate, mononematous conidiophores. It is distinguished from the known species of *Memnoniella* on the basis of morphology and dimension of conidiophores and conidia. A key to the species of *Memnoniella* is given.

Key words: tropical fungi, hyphomycetes, Andaman Islands, biodiversity

## INTRODUCTION

During studies on the taxonomy and diversity of microfungi of the forests of India, an interesting hyphomycete producing dark brown, verruculose, aseptate, spherical conidia with a hyaline minute basal papilla, developing on monophialidic, discrete, hyaline conidiogenous cells and short, partly hyaline, thick-walled, septate, branched, mononematous conidiophores was isolated in culture from fallen and decaying leaves of an unidentified dicot plant from the forests of Andaman Islands, India. The fungus is described here as a new species of the genus *Memnoniella* Hohnel.

Litter samples collected from the forests of Andaman Islands were air-lifted to Goa and immediately incubated in sterile moist chambers in the laboratory for about two weeks. Pure culture of the fungus was established by single spore isolation on to malt extract agar medium. The sporulating colonies of the fungus were mounted in lactophenol, examined under an Olympus bright field research microscope, and illustrated using a drawing tube fitted to the microscope unit.

## TAXONOMIC PART

*Memnoniella indica* sp. nov.

(Fig.1)

Ad fungos conidiales pertinens. *Coloniae* effusae, cum rotundus marginis, subhyalina ad brunneae, usque 3 cm in MEA in 7 dies. *Mycelium* partim superficiale, partim immersum, ex hyphis septatis, ramosis, hyalimis vel pallide brunneis 2.5-3.5  $\mu$ m lat. compositum. *Conidiophora* mononematosa, erecta, septata, ramosa, crassitunicata, infra hyalina et levia ad supra pallide fusca et verruculosa, 35-75  $\mu$ m longa, 5-5  $\mu$ m lat. ad basim, 3-4  $\mu$ m ad ramosis et usque 1  $\mu$ m ad extremum distalis; *Cellulae conidiogenae*

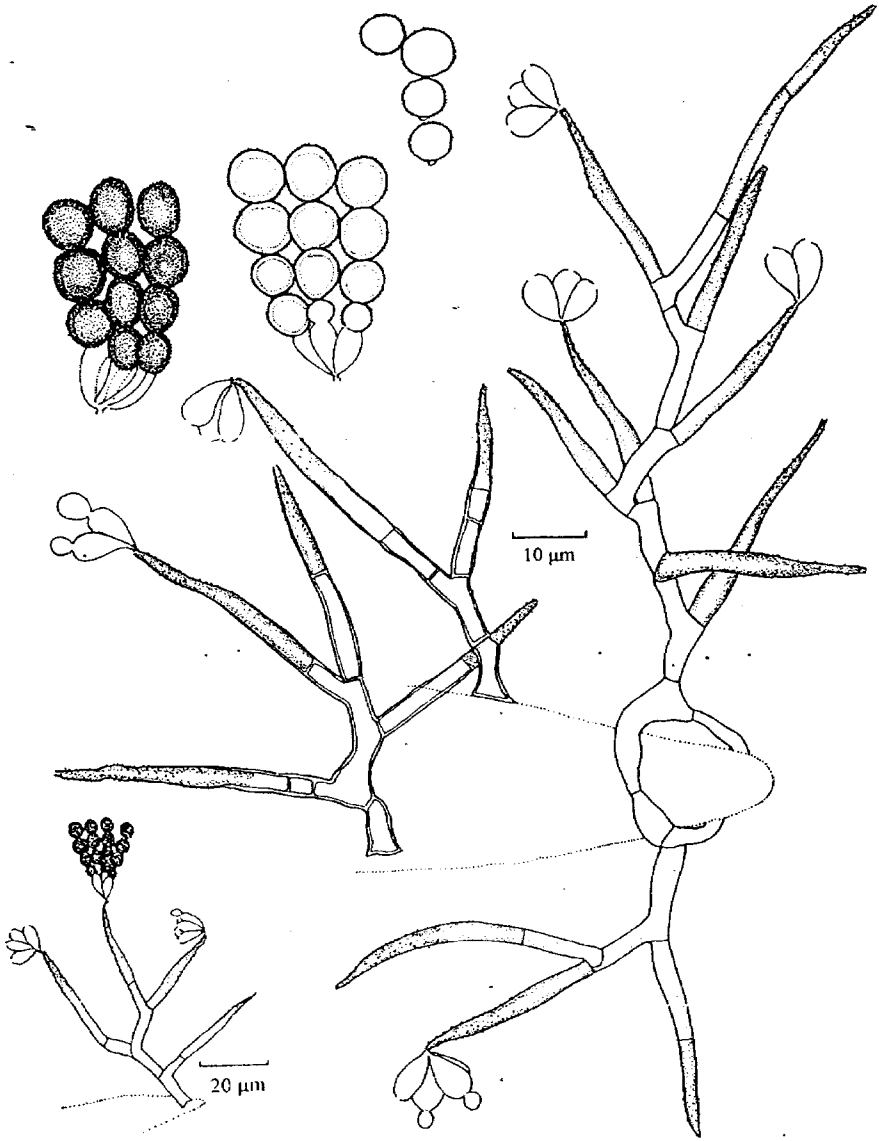


Fig. 1. *Memnoniella indica* sp. nov.: a. Branched conidiophores with conidia, b. Conidiogenous cells with attached conidial chains, c. Conidia.

monophialidicae, discretatae, terminalis, ellipsoidea ad pyriforma, levis, hyalina ad atrobrunnea, 5-10 x 5-7  $\mu\text{m}$ . *Conidia* catenata, globosa, aseptata, verrucosa, crassitunicata, atrobrunnea to nigra, 5-6  $\mu\text{m}$  in diam.

HOLOTYPUS, In foliis putrescentibus dicota, Andaman Islands, India, 20<sup>th</sup> January 2001, leg. Rajiv Kumar, Herb. No. IMI 389316.

Terrestrial litter hyphomycete. *Colonies* effuse, flat, with a circular margin, subhyaline to brown, attaining a diam. of 3 cm on MEA after 7 days. *Mycelium* partly superficial, partly immersed, composed of septate, branched, colourless to pale brown hyphae 2.5-3.5  $\mu\text{m}$  wide. *Conidiophores* mononematous, erect, septate, branched, thick-walled, colourless and smooth below and slightly pigmented and minutely verrucose in the above half, with the tip of the stipe tapering into a pointed and fragile end on which groups of 3-7 phialides arise, 35-75  $\mu\text{m}$  long, 3.5-5  $\mu\text{m}$  wide at the base and up to 1  $\mu\text{m}$  at the pointed end. *Conidiogenous cells* monophialidic, discrete, terminal, 3-7 on each conidiophore tip, ellipsoidal to pyriform, without collarette, smooth, hyaline, 5-10 x 5-7  $\mu\text{m}$ . *Conidia* catenate, spherical, with a minute basal papilla, aseptate, verrucose, thick walled, dark brown to black, 5-6  $\mu\text{m}$  in diam.

The genus *Memnoniella* Hohnel, typified by *M. echinata* (Riv.) Galloway, is characterized by production of catenate, simple, spherical to sub-spherical, grey to black conidia on discrete phialides, usually with a small opening and without a collarette, in groups of up to 10 at the apices of mononematous, unbranched and occasionally forked conidiophores which are sometimes inflated at the apex, grey to brown, smooth, minutely verruculose and often covered in part with dark granules (Ellis, 1971).

In addition to the type, 5 species of *Memnoniella* have been described. *M. stilboidea* (Munjal & Kapoor) M.B. Ellis and *M. leprosa* Castaneda possess scattered synnema whereas all the other species have mononematous conidiophores. While the former produces verruculose dark brown to blackish brown spherical conidia of 4-5.5  $\mu\text{m}$ , the latter gives rise to 7-12  $\mu\text{m}$  globose conidia with an upper dark brown thick-walled portion and lower pale to olivaceous brown comparatively thin-walled region (Ellis, 1976; Castaneda, 1986). Ellis (1971) maintained *M. echinata* and *M. aterrima* Hohnel & Mazzuchetti as synonyms. *M. zingiberis* Vasant Rao with verrucose dark conidia of 4-7  $\mu\text{m}$  differs from *M. echinata* in having very short conidiophores and more phialides, besides being a pathogen on rhizomes of *Zingiber officinale* Rose (Rao, 1963). *M. subsimplex* (Cooke) Deighton produces spherical to sub-spherical, dark brown, verrucose (with widely spaced large warts), 6-9  $\mu\text{m}$  diam. conidia. *M. levispora* Subram. produces smooth and 4-6  $\mu\text{m}$  diam. conidia. *M. indica* produces catenate conidia on thin-walled phialides which often hang or swivel on thick-walled, branched conidiophores with pointed tips.

A taxonomic key is proposed to delineate species of the genus *Memnoniella*.

- |   |                      |
|---|----------------------|
| 1. Conidiomata synnematous.....                         | 2                    |
| 1. Conidiomata mononematous.....                        | 3                    |
| 2. Conidia verruculose, 4-5.5 $\mu\text{m}$ -----       | <i>M. stilboidea</i> |
| 2. Conidia verrucose, leprose, 7-12 $\mu\text{m}$ ----- | <i>M. leprosa</i>    |
| 3. Conidia 6-9 $\mu\text{m}$ in diam.-----              | <i>M. subsimplex</i> |
| 3. Conidia less than 6 $\mu\text{m}$ in diam.....       | 4                    |

4. Conidia smooth, 4-6  $\mu\text{m}$ ----- *M. levispora*  
 4. Conidia verrucose.....5  
 5. Conidiophore tip tapered to a narrow point-----*M. indica*  
 5. Conidiophore tip inflated.....6  
 6. Conidiophore 50-100  $\mu\text{m}$ , Phialides in groups of 4-8,  
     7-9 x 3-5  $\mu\text{m}$  -----*M. echinata* (= *M. aterrima*)  
 6. Conidiophore 37-50  $\mu\text{m}$ , Phialides in groups of 8-14,  
     6.3-14.7 x 4.2-5.2  $\mu\text{m}$  -----*M. zingiberis*

#### ACKNOWLEDGEMENT

This work is supported by a research grant to Dr. D. J. Bhat from the Ministry of Environment & Forests, Government of India, New Delhi. We are indebted to Prof. Roger D. Goos, University of Rhode Islands, for kindly reviewing the manuscript.

#### LITERATURE CITED

- CASTANEDA, R.F. 1986. *Fungi Cubense: "Alejandro de Humboldt"*. la Habana, Cuba.  
 ELLIS, M.B. 1971. *Dematiatious Hyphomycetes*. Commonwealth Mycological Institute, Kew, Surrey, England.  
 ELLIS, M.B. 1976. *More Dematiatious Hyphomycetes*. Commonwealth Mycological Institute, Kew, Surrey, England.  
 MATSUSHIMA, T. 1975. *Icones Microfungorum A Matsushima Lectorum*. Matsushima. Kobe, Japan.  
 RAO, V. 1963. Some new records of Fungi-Imperfecti from India. *Sydowia* 16: 41-45.