

## ***Heliocephala natarajanii* sp. nov. from India**

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**Abstract** – *Heliocephala natarajanii* sp. nov. is described based on a strain isolated while trying to obtain a culture of the Basidiomycete *Pisolithus tinctorius*. The species differs from *H. proliferans* and *H. zimbabwensis* by the presence of a pore at the apex of the conidial rostrum.

***Heliocephala*, *Holubovaniella*, Hyphomycete, India, Taxonomy.**

**Résumé** – *Heliocephala natarajanii* sp. nov. est décrite sur base d'une culture obtenue lors d'une tentative d'isolement d'une souche du basidiomycète *Pisolithus tinctorius*. L'espèce est proche de *H. proliferans* et *H. zimbabwensis* dont elle se différencie par la présence du pore à l'apex du rostre.

***Heliocephala*, *Holubovaniella*, Hyphomycète, Inde, Taxonomie.**

### INTRODUCTION

The Hyphomycete genus *Heliocephala* Rao, Reddy & de Hoog was first reported from India (Rao *et al.*, 1984) with the type species *H. proliferans* Rao *et al.* Later, Decock *et al.* (1998) described *H. zimbabwensis* Decock *et al.* from southern Africa. The genus *Heliocephala* is well characterized by radially arranged, pale brown, long rostrate conidia, that are borne from monoblastic, ampulliform conidiogenous cells, the latter clustered at the top of the conidiophore. Conidia sometimes germinate by their apical rostrate cell to develop a secondary cluster of conidiogenous cells. *Heliocephala proliferans* has three-celled conidia with a minutely roughened basal cell, smooth upper cells, and a straight to curved or uncinately rostrum (Rao *et al.*, 1984). *Heliocephala zimbabwensis* differed by having completely smooth conidia and a straight rostrum.

In this paper, we report a third species of *Heliocephala*, sharing the features of both former species, but differing by having a pore at the apex of the conidial rostrum. This organism was isolated as a contaminant while attempting to obtain a pure culture of *Pisolithus tinctorius* from basidiocarp.

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## MATERIAL AND METHODS

The strain was grown on Potato Dextrose Agar (PDA) medium and on Water agar + Banana leaf medium and maintained at 25° C.

## DESCRIPTION

***Heliocephala natarajanii* Kumaresan et M. Sriniv. sp. nov.**, (Fig. 1-20)

*Typo generis Heliocephala proliferans* Rao et al. *affinis*, sed *conidiis cum poro apicalis in rostro satis differt*.

*Holotypus: Exsiccata cultura in herbario MUBL 3173, India, Chennai, ex cultura Pisolithus tinctorius, August 2001, Malathi Srinivasan. Ex typo vivae cultura MUBL 3173; MUCL 43745.*

Etymology: The species is named in honour of Professor K. Natarajan, CAS in Botany, University of Madras.

**Colonies** slow growing at 25° C, attaining a diam. of 2.5-3.0 cm in 21 days, light grey to light brown, cottony to velutinous. *Mycelium* superficial and immersed, hyphae initially hyaline, becoming brown, septate. **Conidiophores** macrone-matous, mononematous, straight or slightly flexuous, unbranched, initially hyaline, becoming brown, thick-walled, smooth, 1-7 septate (mostly 3-4), up to 109 µm long, regularly 1.5-3.5 µm wide above the base, 3.5-4.5 µm at the apex, basal cell mostly constricted at its apex (ca. 1.5 µm at the apex) (Fig. 1, 13). **Conidiogenous cells** monoblastic (Fig. 3-6), discrete, borne in clusters on the apical cell (Fig. 2) of the conidiophore, occasionally also formed on the sub-apical cell, ampulliform or ovoid with short neck (3.5-4.5 µm wide at the base and 1.0-1.5 µm wide at the neck), smooth-walled, cells initially hyaline, later becoming pale brown to brown, very rarely borne in successive nodes forming rosettes on a single conidiophore (Fig. 7, 16). Conidiogenous cells sometimes arise directly on hyphae (Fig. 15). **Conidia** arranged in compact heads (Fig. 1, 13, 14), ellipsoid-rostrate to slightly ovoid-rostrate, 2(-3) septate (Fig. 8, 9, 19, 20), the first septum in the middle of the conidial body, the second just before the rostrum, pale brown with the median cell darker, and the basal cell minutely verruculose, (8.5)-17-34-(103) × (1.5)-2.5-4.5-(6.5) µm, the conidial body 7-20 µm long, the rostrum short to very long, up to 85 µm long, straight, curved or uncinat (Fig. 17), and with a prominent pore at its apex (Fig. 8, 13, 19). Conidia occasionally germinating at the rostrum producing a secondary cluster of conidiogenous cells apically (Fig. 10, 18). Some conidia formed directly on hyphae (Fig. 11, 12).

## DISCUSSION

*Heliocephala proliferans* (Rao et al., 1984) described from India was characterized by erect conidiophores bearing radiate heads of rostrate conidia. This species has conidia with a minutely verruculose basal cell, with the apical cell

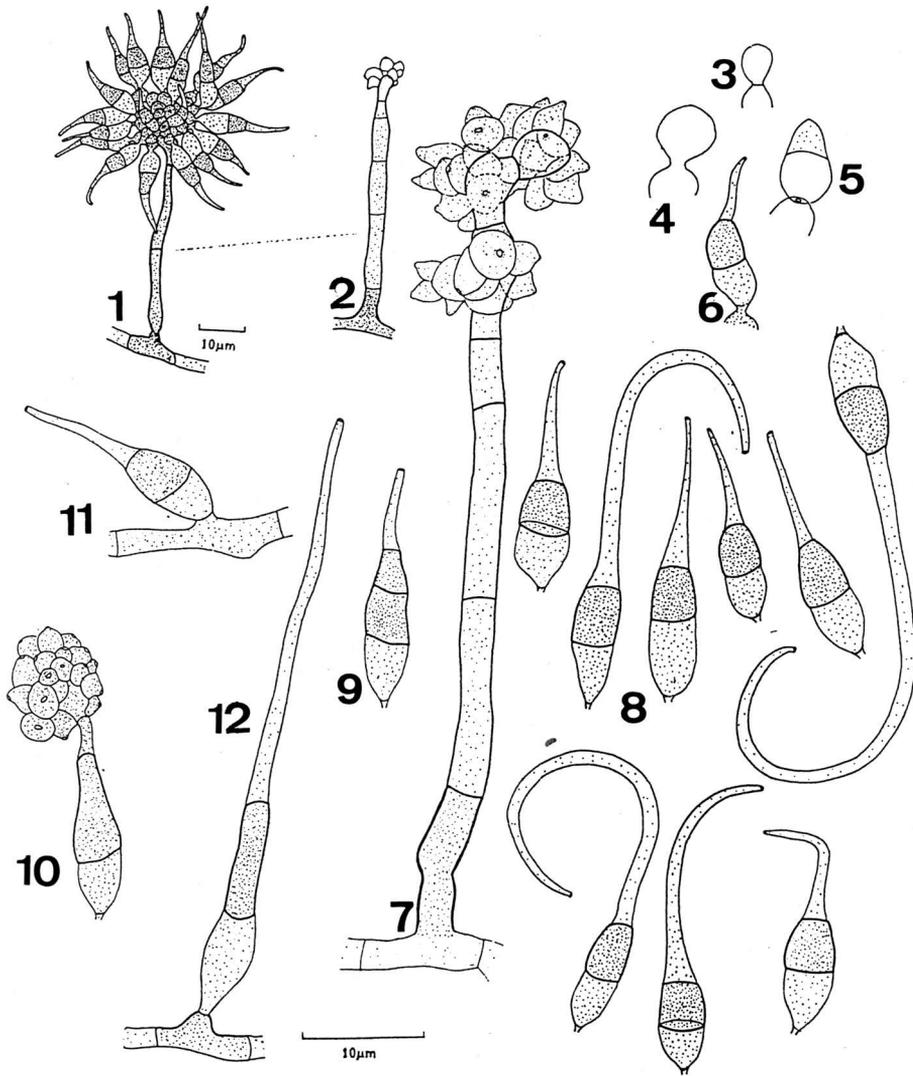
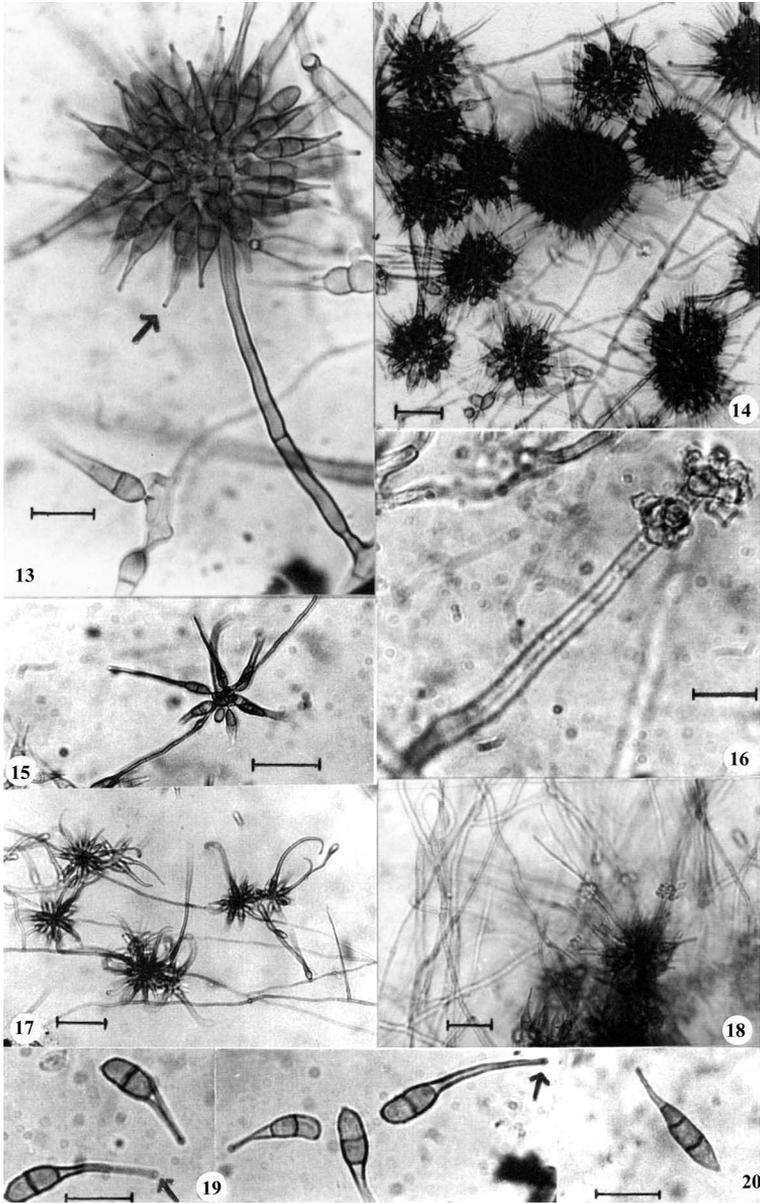


Fig. 1. A cluster of conidia radiating from the conidiogenous cells borne on a conidiophore. 2. Conidiophore bearing the conidiogenous cells. 3-6. Conidial formation from the conidiogenous cell. 7. Conidiogenous cells borne on successive nodes on a single conidiophore. 8. 2-septate conidia, showing uncinat, straight and curved rostrums. 9. Three septate conidium. 10. Formation of conidiogenous cells at the rostral tip of a conidium. 11, 12. Direct conidial formation from the hypha.

drawn into a rostrum that is subulate, straight to unciform. Decock *et al.* (1998) described *H. zimbabweensis*, from Zimbabwe. Unlike *H. proliferans*, this species is characterized by completely smooth conidia with a darker median cell and a subulate, straight rostrum.



**Fig. 13.** A conidiophore bearing a single radial head showing numerous conidia (note the presence of pore at the rostral tips, indicated by arrows)[Bar = 10  $\mu$ m]. **14.** Radial clusters of conidia [Bar 20  $\mu$ m]. **15.** A hyphae bearing conidiogenous cells (with conidia) directly without the formation of a conidiophore [Bar 20  $\mu$ m]. **16.** Successive clusters of conidiogenous cells on a single conidiophore [Bar = 10  $\mu$ m]. **17.** Conidial clusters showing uncinete rostrums [Bar = 40  $\mu$ m]. **18.** Conidia giving rise to secondary conidiogenous cells [Bar = 20  $\mu$ m]. **19.** Conidia (2-septate); arrows indicate rostral pore [Bar = 10  $\mu$ m]. **20.** A three septate conidium [Bar = 10  $\mu$ m].

*Heliocephala natarajanii* differs from both former taxa by having a pore at the apex of the rostrum. The basal cells of the conidia are minutely verruculose, with the median cells darker.

In culture, conidia occasionally arise directly from isolated conidiogenous cells on hyphae. Another interesting feature was the rare occurrence of percurrent growth of the conidiophore, forming a second cluster of conidiogenous cells. Both features could be regarded as an artefact of culturing the fungus *in vitro*. This last feature has been described in *Holubovaniella* Castañeda (Castañeda, 1985), but the other conidiophore and conidial features are more closely related to the genus *Heliocephala*.

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