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CIRRENALIA BASIMINUTA: A NEW LIGNICOLOUS MARINE DEUTEROMYCETE FROM THE TROPICS

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During our examination of mangrove and submerged wood for marine fungi an underscribed species of *Cirrenalia* was encountered. Ten *Cirrenalia* species have been described; five from the marine environment (*C. fusca*, *C. macrocephala*, *C. pseudomacrocephala*, *C. pygmaea*, *C. tropicalis*) and five from terrestrial habitats (*C. donnae*, *C. lignicola*, *C. indica*, *C. japonica*, *C. palmicola*) (Goos, 1985). The new fungus was collected on mangrove wood from Goa and from test blocks submerged in the sea at Kuwait (Zainal and Jones, 1984, 1986).

CIRRENALIA BASIMINUTA Raghu-Kumar et Zainal sp. nov.
(Figs. 1-10).

Hyphae 2.4-5.0µm diametro, septatae, hyalinae vel pallido-brunneae. *Conidiophora* terminalia, monoblastica, 8.2-28.1 x 1.4-2.5µm. *Conidia* acrogena, solitaria, helicoidea, semicontorta, 29-41µm alta, 18-34µm diametro, 3-4 (-5) septata, constricta ad septa. *Cellula apicalis* 9.4-16.2 x 9.0-13.7µm, subglobosa, cellula ad basim attenuata, 4.9-17µm longa, 2.5-7.0µm diametro.

Substratum: lignum immersum *Rhizophorae mucronatae* et *Pini sylvestris*.

Holotypus: in laminis vitreis et culturis ex ligno immerso *Pini sylvestris*, IMI. 318783.

Isotypus: cultura ex *Rhizophora mucronata* (2/10/86).

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Hyphae: 2.4-5.5µm in diameter, septate, hyaline to pale brown. *Conidiophores* terminal, integrated, monoblastic and determinate, 8.2-28.1 x 1.4-2.5µm. *Conidia* borne acrogenously, rarely borne laterally, and directly on conidiophore, solitary, helicoid, semi-contorted, 29-41µm high and 18-34µm in diameter. *Conidia* 3-4 (5) septate, constricted at the septa. Cells increasing in size from base to apex. Apical cell 9.4-16.2 x 9.0-13.7µm subglobose basal cell cylindrical and tapering, 4.9-17.1µm long and 2.5-7.0µm wide at the widest part. Pigmentation of the cells increasing from base to apex, the apical cell light brown with a reddish tinge.

Holotype: Slides and cultures isolated from submerged test block at Doha, Kuwait, January 1984, IMI. 318783.

Isotype: *Cirrenalia basiminuta* culture isolated from *Rhizophora mucronata* Lank. 2nd October 1983 from mangroves at Orda, Goa, India.

Etymology: from the latin *basim*-base, and *minuta* - small referring to the small basal cell of the conidium.

Conidial measurements of Kuwait material on wood blocks were 13.6 (15.8) 17µm high and 14-18µm diameter while the basal cell is the smallest, 10-14µm long and 5-7µm wide. The conidia from the culture material (Goa) being slightly larger.

The conidium initial arises as an apical, club-shaped swelling of the conidiogenous cell which is then cut off by the septum. This cell increases in size and the rest of the septa are then formed. The young conidium enlarges the apical cell attains its characteristic shape and darkens in colour and is usually the darkest.

C. basiminuta most closely resembles *C. pseudomacrocephala*; however, the latter has conidia that are less constricted, darker and usually have more septa (3-6). *C. fusca* has a more reniform or ellipsoidal apical cell and is thus quite

distinct from *C. basiminuta*. *C. pygmea* has very dark brown conidia and a characteristic apical cell which is much larger than that of *C. basiminuta*. *C. basiminuta* differs from all the other marine *Cirrenalia* species in conidial dimensions, septation, degree of coiling and constriction at the septa and the conidia are paler in colour (see Table 1 after Kohlmeyer and Kohlmeyer, 1979; Goos, 1985). Also the basal cell is quite characteristic and is peg-like in appearance.

The genera *Zalerion* and *Cirrenalia* are similar in morphology. The latter has conidia that are brown to fuscous in colour (fuscous in *Zalerion*), the apical cell diameter is greater than the other cells and the conidia are less coiled than those of *Zalerion*. This raises the question of the placement of the terrestrial species, because these have apical cells that are generally the same diameter as the remaining cells and are many times more septate (up to 12 septa).

Teleomorphs have not been found for any species of *Cirrenalia*. Nakagiri (1984) demonstrated that *Lulworthia uniseptata* is the teleomorph of *Zalerion maritimum*.

There seems to be a blurring of the taxonomic criteria for the separation of these genera: particularly with the inclusion of species such as *C. donnae* and *C. lignicola* (Sutton, 1973; Kirk, 1981). Sutton (1973) broadened the generic description because he believed that a distinctive feature of *Cirrenalia* is that the "apex of the conidiogenous cells and basal cell of the conidium are both at the centre of the helix formed by the conidial filament, whereas in other helicosporous fungi such as *Helicosporium* and *Helicoma* they are formed on the periphery of the helix". Sutton (1973) has ignored the most distinctive feature of the genus, namely that the diameter and pigmentation of the conidia increase from the base to the apex of the conidium (Meyers and Moore, 1960; Kohlmeyer and Kohlmeyer, 1979).

We concur with the views of Goos (1985) that the genus *Cirrenalia* is a heterogenous assemblage of species. For this reason we would exclude: *C. donnae*, *C. lignicola*, *C. japonica* (?) and *C. palmicola* from *Cirrenalia*. However, for the present, the terrestrial species are best left in *Cirrenalia*, until further studies are undertaken.

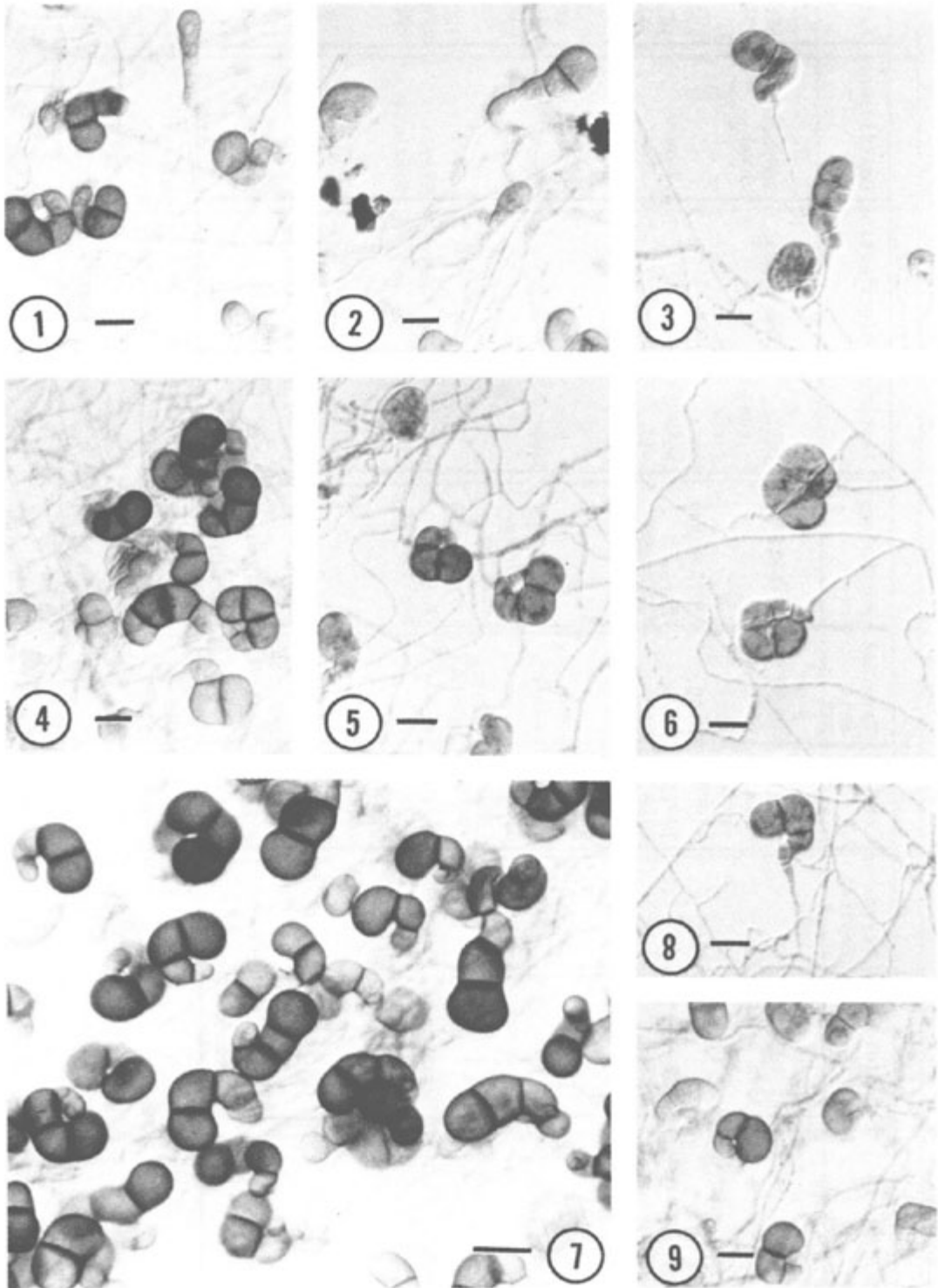
TABLE 1. CONIDIAL MEASUREMENTS (μ) OF *CIRRENALIA* SPECIES

Species	Conidiophore size	Degree of Coiling	Conidia	Terminal cell	Morphology	Septation	Distribution	Conidiophore	Reference
Marine <i>C. fusca</i> Schmidt.	up to 23(33) x 3-6	1 ¹ / ₂	20-36 high	13-33 high	reniform to ellipsoidal sausage- shaped	2-4	Temperate	Micro- nematos	Schmidt 1969
<i>C. macrocephala</i> (Kohlm.) Meyers & Moore	3.5-25 x 2-5	1 ¹ / ₄ -1	12-35 high 12-23.5 diam. reddish brown	5.5-13.5 high 6.5-17 diam.	subglobose	2-7	Cosmopolitan	semi- macro- nematos	Kohlmeyer & Kohlmeyer 1979
<i>C. pseudomacrocephala</i> Kohlm.	23-30 x 3-5	1 ¹ / ₄	27.5- 38.5 diam. brown	16.5- 18.5 high 16.5-20 diam.	subglobose to ellipsoidal	3-6	Tropical?	semi- macro- nematos	Kohlmeyer & Kohlmeyer 1979
<i>C. pygmaea</i> Kohlm.	lacking	1 ¹ / ₂ -1	25.5-31 28.5-34 black shiny	16.5-23 diam.	reniform	3-4	Tropical	-----	Kohlmeyer & Kohlmeyer 1979
<i>C. tropicaeata</i> Kohlm.	25-42 x 2.5-5.5	1-1 ¹ / ₂	20-38.5 diam. brown	9-15 high 10-20 diam.	subglobose to ellipsoidal	6-12 slightly const- ricted at septa	Tropical	macro- nematos	Kohlmeyer & Kohlmeyer 1979
<i>C. basistrata</i>	8.2-28.0 x 1.4-2.5	1 ¹ / ₂	29-41 high 18-34 diam. pale brown	9.4-16.2 x 9.0- 13.7	subglobose	3-5	Tropical?	-----	

TABLE I. Cont'd

Species	Conidiophore size	Degree of Coiling	Conidia	Terminal cell	Morphology	Septation	Distribution	Conidiophore	Reference
Terrestrial <i>C. donnae</i> Sutton	up to 35 x 3-6	1	20-25.5 diam. reddish brown	10 wide	Globose	7-11	Temperate	Sporo- chial	Sutton 1973
<i>C. indica</i> Rao & Reddy	6-9 x 3-6	1/4-1/2	10-15 diam. subhya- line/dark brown	-----	Large variable in shape	-----	-----	-----	Rao & Reddy 1978
<i>C. japonica</i> Sugiyama	63 x 2.5 x 6	1/2-1	18-28 diam. reddish brown	-----	Rounded slightly swollen	4-9	?	Fasci- culate	Sugiyama 1981
<i>C. lignicola</i> Kirk	Indeter- minate	1/2-2	15-20 diam. olive aceous brown	-----	Rounded	up to 12	Temperate	Micro- nematos	Kirk 1981
<i>C. palmicola</i> Matsushima	-? x 1-2.5	1-3	5-8 x 40-100 dark brown	-----	Rounded	10-30	Tropical	Micro- nematos	Matsushima 1980

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Figs. 1-9. Light micrographs of *Cirrenalia basiminuta*. Stages in the development of conidia. Bar lines = 10 μ m.

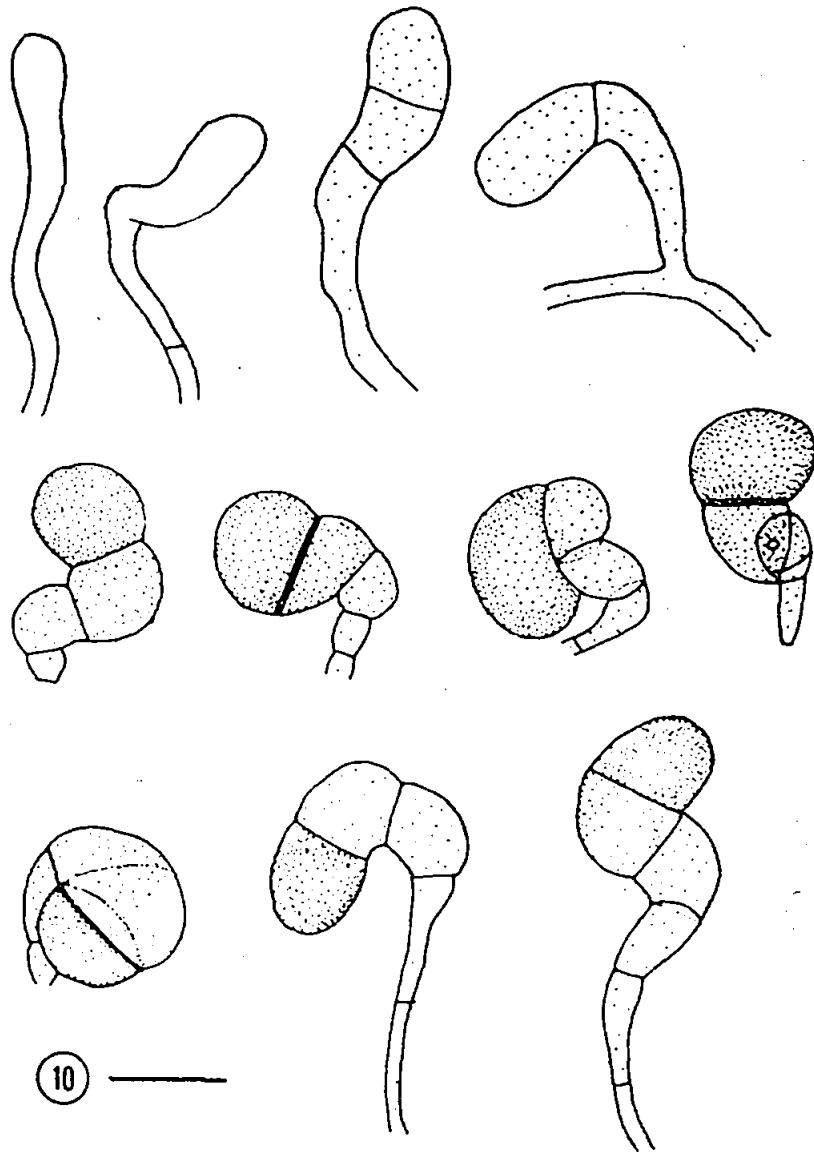


Fig. 10. Line drawings of conidial development in *Cirenalia basiminuta*. Bar line = 10 μ m.

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