J. Mycopathol. Res. **39**(1):61–63 (2001) *Printed in India*

Re-evaluation of the Family Asterinaceae

V. B. HOSAGOUDAR, T. K. ABRAHAM AND C. K. BIJU

Microbiology Division. Tropical Botanic Garden and Research Institute, Palode 695 562, Thiruvananthapuram, Kerala

The new family Lembosiaceae in the order Asterinales has been seggregated from Asterinaceae to include the genera having ellipsoidal to elongated or X or Y shaped thyrothecia split or dehisce longitudinally. Key to the genera of the families Asterinaceae and Lembosiaceae are provided.

Key words : Asterinales, Asterinaceae, Lembosiaceae, new family

Levelle (1845) proposed the genus *Asterina* and Fries (1849) accommodated it in the family Asterinaceae. Saccardo (1883) proposed the family Microthyriaceae to accommodate the genera having dimidiate, radiate and flattened ascomata. Theissen (1913) proposed the order Hemisphaeriales to accommodate the genera having shield-shaped ascomata. Luttrell (1973) placed bitunicate ascomycetes with superficial, dimidiate-scutate ascomata under the order Hemisphaeriales and Wehmeyer (1976) placed these under the order Microthyriales (Clements and Shear, 1931). Muller and Arx (1962) and Arx and Muller (1975) clearly distinguished Asterinaceae from Microthyriaceae. The former is with non-ostiolate thyrothecia, dehisce stellately at the centre and have oval to globose asci. While, the latter have thyrothecia with ostiole and have cylindrical asci. The family Asterinaceae was raised to an order Asterinales (Barr, 1976). The order Asterinales includes four families: Asterinaceae, Englerulaceae, Parmulariaceae and Parodiopsidaceae (Eriksson and Hawksworth, 1986).

The family Asterinaceae includes 30 genera (Arx and Muller, 1975) and of which, *Clypeolella* has become synonymous to *Schiffnerula* (Hughes, 1978). The family Asterinaceae is heterogeneric. To bring uniformity, a separate family has been proposed here.

ASTERINACEAE : (*S.I.*)

1. Thyrothecia orbicular to oval, dehisce stellately at the centre ....I. Asterinaceae
1. Thyrothecia elongated, ellipsoidal, X or Y shaped, dehisce longitudinally at the centre ....II. Lembosiaceae

Lembosiaceae V. B. Hosagoudar, fam. nov.

Differt a Asterinaceae thyrotheciis elongatis, ellipsoidis, X or Y formes, ad centro dehiscentis longitudinalis.

Type genus *Lembosia* Lev.

Key to the genera of Asterinaceae (based on Arx and Muller, 1975)

1. Superficial hyphae with lateral or intercalary appressoria, hypostroma or innate hyphae absent 2
1. Superficial hyphae devoid of appressoria, hypostroma or innate hyphae present 9
2. Ascomata join laterally and form stromatic crust 3
2. Ascomata discrete with individuality 4
3. Ascomata on bright hyphae, ascospores small and hyaline .... *Asterotexis*
3. Ascomata beneath the dark hyphae, ascospores brown .... *Symphaster*
4. Appressoria partly or fully intercalary .... *Asterolibertia*

4. Appressoria lateral 5
5. Ascospores 2-celled 6
5. Ascospores 3 to several celled 7
6. Thyrothecia and/or hyphae setose .... *Trichasterina*
6. Thyrothecia and/or hyphae not setose .... *Asterina*
7. Ascospores 3-celled, attenuated at the base .... *Patouillardina*
7. Ascospores 4 to many celled 8
8. Ascospores 4-celled, end cells smaller and darker, hyphae with branched conidia .... *Batistinula*
8. Ascospores more than 4-celled, all cells equal, hyphae without conidia .... *Parasterinopsis*
9. Superficial hyphae with swollen cells, entering the host through stomata, thyrothecia irregular in outline with thick wall .... *Placoasterella*
9. Superficial hyphae with cylindrical cells, narrow, occasionally with appressoria or conidiogenous cells 10
10. Hypostroma subcuticular, intra-epidermal, appressoria appear in advancing hyphae 11
10. Hypostroma absent, nutritive hyphae developed in the host 14
11. Stroma radiating, 4-celled conidia produced on Oleaceae and Celastraceae members .... *Asterodothis*
11. Not in radiating stromata 12
12. At least some portion of the superficial hyphae with appressoria .... *Viegasia*
12. Superficial hyphae without appressoria 13
13 Hypostroma subcuticular, thin .... *Dothidasteromella*
13. Hypostroma subepidermal or leaf permeating .... *Macowaniella*
14. Ascospores 4-celled, end cells small .... *Halbania*
14. Ascospores 2-celled 15
15. Cells of ascospores separate early, hyphae setose .... *Anariste*
15. Cells of ascospores not separate early 16
16. Thyrothecia and/or hyphae covered with septate conidia .... *Eupelte*
16. Thyrothecia and/or hyphae not covered with septate conidia 17
17. Thyrothecia confluent and stromatic .... *Neostomella*
17. Thyrothecia descrete 18
18. Ascospores and superficial hyphae brown .... *Prillieuxina*
18. Ascospores hyaline, superficial hyphae inconspicuous, light when present .... *Aphanopeltis*

Key to the genera of Lembosiaceae

1. Superficial hyphae appressoriate 2
1. Superficial hyphae rarely appressoriate 5
2. Appressoria intercalary .... *Cirsosia*
2. Appressoria lateral 3
3. Thyrothecia opening by deliquescence; dark, septate conidia borne on the hyphae .... *Yamamotoa*
3. Thyrothecia opening by rupture, conidia absent 4
4. Thyrothecia setose .... *Trichamelia*
4. Thyrothecia not setose .... *Lembosia*
5. Wall of thyrothecia textura epidermoidea .... *Aulographum*
5. Wall of thyrothecia textura radiate 6
6. Ascospores 1-3-septate .... *Uleothyrium*
6. Ascospores 1-septate only 7
7. Hypostroma subcuticular or intra-epidermal .... *Echidnodes*
7. Hypostroma absent or stomatic 8
8. Superficial hyphae with swollen cells, entering the host through stomata, ascospores hyaline .... *Aulographina*
8. Superficial hyphae with cylindrical cells 9
9. Parasitic, superficial hyphae and ascospores brown .... *Echidnodella*
9. Saprophytic, superficial hyphae hyaline, disappearing early, ascospores hyaline or brownish .... *Morenoina*

ACKNOWLEDGEMENTS

We are thankful to Dr. G. Sreekandan Nair, Director, TBGRI, Palode for encouragement and one of us (CKB) is grateful to CSIR fellowship.

REFERENCES

Arx, J. A. V. and Muller, E. (1975). A re-evaluation of the bitunicate ascomycetes with keys to families and genera. *Studies in Mycology* 9 : 1–159.

Bar, M.E. (1976). Perspectives in the ascomycotina. *Mem.*

New York Bot. Gard. 28 : 1-8

Clements, F.E. and Shear, C.L. (1931). *The genera of fungi.* H. W. Wilson Co., New York.

Eriksson, O. and Hawksworth, D. L. (1986). An alphabetical list of the generic names of ascomycetes – 1986. *Systema Ascomycetum* **5** : 4-184.

Fries, E.M. (1849). *Summa Vegetabilium Sandinaviae.* Sectio posterior. Holmiae et Lipsiae pp. 313.

Hughes, S.J. (1987). Pleomorphy in some hyphopodiate fungi. In : Sugiyama (ed). *Peomorphic fungi,. the diversity and its taxonomic implications.* Kodansha & Elsevier, Tokyo & Amsterdam, etc. pp. 103-139.

Levelle, J.H. (1845). Champignons exotiques. *Ann. Sci. Nat. Ser.* 3, **3** : 38-71.

Luttrell, E.S. (1973). Loculoascomycetes. In : G.C. Ainsworth., F.K. Sparrow and A.S. Sussman (eds.). *The fungi, an advanced treatise Vol. IV A*, pp. 135-219. Academic Press, New York.

Muller, E. and Arx, J.A.V. (1962). *Die gattungen der didymosporen Pyrenomyceten.* Beitr Kryptogamen Flora Schweiz **11** : 1-922.

Saccardo, P.A. (1883). *Sylloge fungorum*-II, pp. 813.

Theissen, F. (1913). Hemispheriales. *Ann. Mycol.* **11** : 468-469.

Wehmeyer, L.E. (1976). The pyrenomycetous fungi, *Mycol. Mem.* **8** : 1-250.

(Accepted for publication October 16 2000)