

Hyphomycetes from the Kumaon Himalayas: *Bahusaganda sundara*

C V SUBRAMANIAN and VINEETA SRIVASTAVA
Central Institute of Medicinal and Aromatic Plants, P.O. CIMAP,
Lucknow 226 015

(Received on 5 May 1993; Accepted on 22 March 1994)

The genus *Bahusaganda* Subram. (1971) [Type species *B. indica* (Subram.) Subram.] is validated by a Latin diagnosis. A hyphomycete collected on dead twigs at Kathgodam, U.P. is described and assigned to the genus as a new species, *B. sundara*.

Key Words: Hyphomycetes, Kumaon Himalayas, *Bahusaganda*

Introduction

The genus *Bahusaganda* was proposed by Subramanian (1971, p. 387) to accommodate *Deightoniella indica* Subram. (Subramanian 1958). The genus was characterized as follows:

“Vegetative hyphae subhyaline to brown, branched, septate. Conidiophores arising laterally or terminally on cells of the hyphae, short, each with an elongate basal cell and septate, torulose upper part, simple, with the apical cell sporogenous, elongating by budding and repeatedly producing sporogenous cells at higher levels. Conidia phaeo-fragmospores, produced singly (sometimes separately in groups of two or rarely three from different points) on the first and successive sporogenous cells, brown to dark brown, formed as blown-out ends from the sporogenous cells”.

The septate conidiophore with production of successive sporogenous cells each usually separated by ordinary non-sporogenous cells and at higher levels distinguish the genus from *Deightoniella* Hughes to which it is closely allied. Further, the internal mycelium and the development of conidiophores from swollen hyphal cells formed within epidermal cells of the host are features

found in *D. africana* Hughes, the type species, but not seen in *Bahusaganda*.

Type: Bahusaganda indica (Subram.) Subram.: The discovery of yet another species of the genus necessitates the formal validation of the generic name by a Latin diagnosis so far not provided by Subramanian.

***Bahusaganda* Subramanian anamorph gen. nov.**

Bahusaganda Subram. gen. nov.
in Subramanian C V, *Hyphomycetes*, p. 387, 1971 (no latin diagnosis, *nomen nudum*)

Hyphomycetes dematiacei conidia blastica producentes. Conidiophora simplicia, septata, torulosa, cum conidiogenae successive ad superior loci segregatae juxta cellulam non conidiogenam. Cellulae conidiogenae solitariae, saepe successivae, globosae, brunneae, mono-vel polyblasticae, collabens vel dein cupulatae. Conidia solitaria, sicca, torulosa, hyalina vel brunnea, multieuseptata; hilum distinctum.

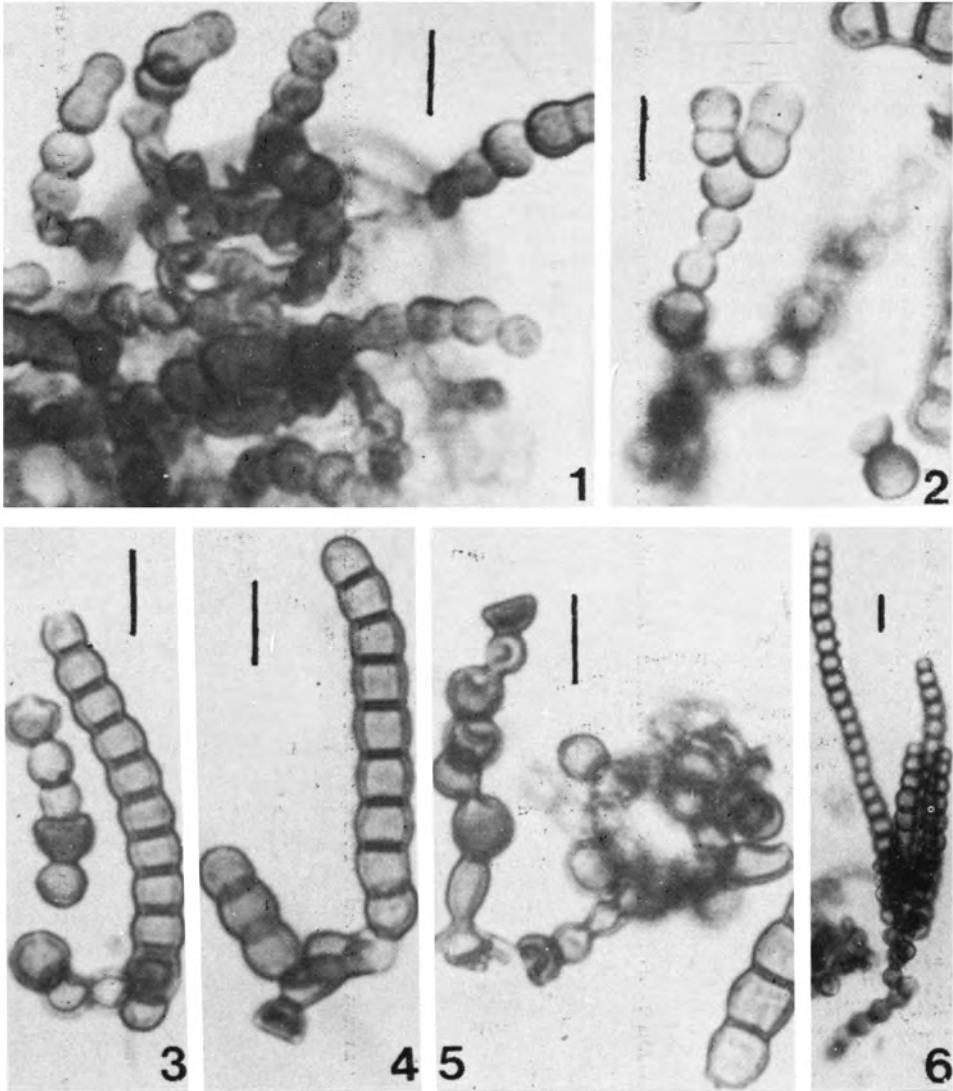
Species typica: Bahusaganda indica
(Subram.) Subram. comb. nov.

Basionym: Deightoniella indica

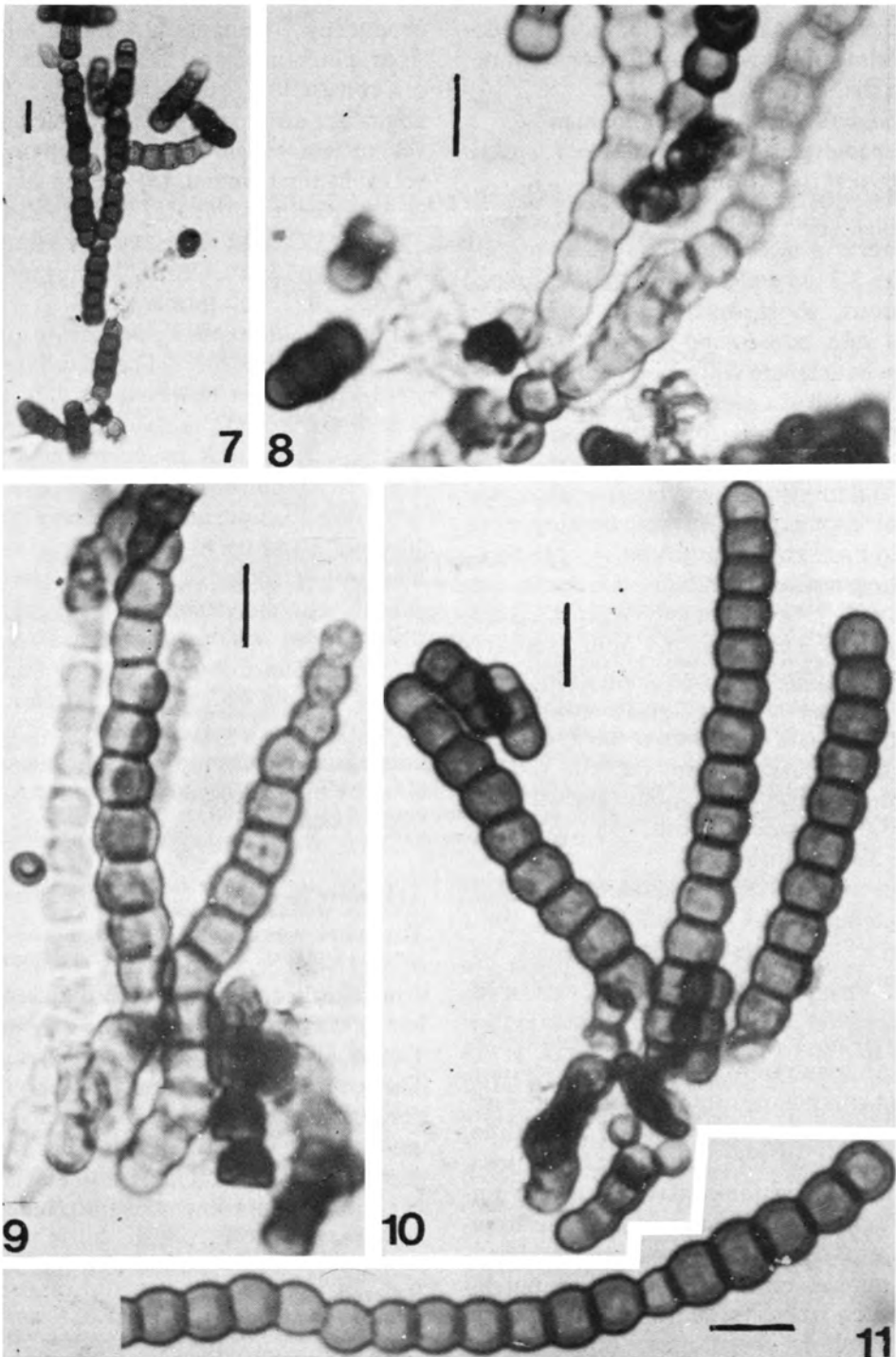
Subram., 1958 *J. Indian bot. Soc.* 38
52-53, fig. B

Type: on dead stems, Government Garden, Ootacamund, Nilgiris, Tamil Nadu, India.

Dematiaceous hyphomycetes producing blastic conidia. Conidiophores simple, septate, torulose, producing successive conidiogenous cells at higher levels separated by non-conidiogenous cells. Conidiogenous cells solitary, sometimes successive, globose, brown, mono- or polyblastic, often collapsing and becoming cupulate following con-



Figures 1-6 *Bahusaganda sundara*. 1, mycelium, conidiogenous cells and conidium initials; 2, conidiogenous cells and young developing conidia. Note two conidiogenous cells separated by two non-conidiogenous cells and two conidia developing on the younger conidiogenous cell; 3, 4, conidiogenous cells, non-conidiogenous cells and nearly mature conidia; 5, a linear series of conidiogenous cells; 6, a cluster of 4 solitary conidia produced from a terminal conidiogenous cell belonging to a linear series. Bar denotes 10 μ m (all ex Type, No. M5)



Figures 7-11. *Torula herbarum* ex No. M1. Note conidiogenous cells and typical branched acropetal chains of 3-4-septate conidia; **8-11,** *Bahusaganda sundara*: **8, 9,** ex No. M1. Conidiogenous cells and conidia (Note hyaline and brown (mature) conidia occurring together); **10,** conidiogenous cells and the solitary conidia. **11,** part of a long torulose conidium (Note hilum).

dial liberation. Conidia solitary, dry, torulose, hyaline to brown, many times euseptate; hilum distinct.

Bahusaganda sundara Subramanian

anamorph sp. nov. (etym. from *sundara* (Sanskrit) = beautiful)

Colonies black, effuse, velvety. Mycelium composed of branched, subhyaline, septate hyphae 2-3 μm wide. Conidiophores micronematous, short, hyaline to subhyaline, 0-3-septate, constricted at septa, torulose, somewhat clavate when non-septate, 20-60 μm long, 4-8 μm wide. Conidiogenous cells terminal, globose to subglobose, dark brown, finely verruculose, mono- or polyblastic, collapsing and becoming cupulate as in *Torula*, giving rise to further conidiogenous cells by proliferation or to one or more non-conidiogenous cells and then to a conidiogenous cell, a process that may be repeated several times, 7-8 μm in diam. Conidia solitary, dry, many- (up to 21) euseptate, constricted at septa, torulose, elongating by apical budding, cylindrical, narrower at the apex, straight or dorsiventral or curved, reddish brown, often hyaline or subhyaline when young, 4-8 μm wide, smooth, rounded at the apex, 52-112 μm long.

Type: on dead twigs of unidentified plant, Kathgodam, U.P. Coll. CVS, 14th Oct. 1991; No. M5. Other collection: on dead twigs, Kathgodam, U.P., Coll. CVS, 14 Oct. 1991, No. M1.

Coloniae atrae, effusae, velutinae. Mycelium ex hyphis ramosis, subhyalinis, septatis, 2-3 μm latis compositum. Conidiophora micronematosa, curta, hyalina ad subhyalina, 0-3-septata, ad septa constricta, torulosa, paulo clavata si non-septata, 20-60 μm longa, 4-8 μm lata. Cellulae conidiogenae terminales, globosae vel subglobosae, atro-brunneae, minute verruculosae, mono-vel polyblasticae, collabens vel dein cupulatae, sicut in *Torula*, cellulae conidiogenae plurae producens vel cellulae non-conidiogenae successivae vel dein una cellula conidiogena repetite

producens, 7-8 μm diam. Conidia solitaria, sicca, pluri-(usque ad 21)-euseptata, ad septa constricta, torulosa, cylindrica, leniter angustata ad apicem, recta, dorsiventralia vel curvata, rufulo-brunnea, saepe hyalina vel subhyalina (immatura), 4-8 μm lata, laevia, ad apicem rotundata, 52-112 μm longa.

Typus lectus ad ramis emortuis ignotus, Kathgodam, U.P., Coll. C V Subramanian, 14 Oct. 1991, sub numero M5].

Both *B. indica* and *B. sundara* are quite similar in many features. The conidial shape, size and septation, however, are different. In *B. indica* the conidia are widest near or in the middle, whereas in *B. sundara* conidial width is somewhat uniform along the length of the conidium. Conidia in *B. indica* may be up to 30-septate and up to 200 μm long, and are markedly verrucose or tuberculate; in *B. sundara* the conidia are up to 21-septate, up to 112 μm long, and are smooth.

In one collection (M1) both hyaline and brown conidia occur, but we are not quite sure if this could be due to the age of the conidium. Since in other features the two collections are similar, they are assigned here to the same species.

Acknowledgements

This work was carried out during the tenure of an INSA Senior Scientist Award to the senior author. The Council of Scientific & Industrial Research sponsored a Project on Taxonomy and Distribution of Microfungi. The senior author thanks the Indian National Science Academy and the Council of Scientific and Industrial Research for the support and the Director, CIMAP, Lucknow for having him work here and for all facilities.

References

- Subramanian C V 1971 *Hyphomycetes*, (New Delhi: Indian Council of Agricultural Research) 930 pp.
 ——— 1988 *Hyphomycetes V*; *J. Indian bot. Soc.* 37