

## **Piptocephalis indica sp. nov. and Piptocephalis sp. from India.**

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With plate XXVI.

*Piptocephalis debaryana* Mehrotra was the first report of a species of *Piptocephalis* from India (Mehrotra, 1960). During the isolations of *Mucorales* from various sources in India two more isolates of *Piptocephalis* have been found. The species concept in this genus is yet in a fluid state (Benjamin 1959, p. 335). The following two isolates are being reported and discussed on the basis of our present knowledge of the known species of the genus.

### **Piptocephalis indica sp. nov.**

Caespit ad *Mucoris* speciem in YpSs evoluti, primum albidum, postea canescentes; hyphae mycelicae septatae, multiramosae: sporangiophora plerumque erecta, brunnescentia, ad basin rhizinis plus minusve ramosis praedita, inferne  $2,2-5,5 \mu$  in apice  $5,5-8,8 \mu$  lata, longitudinaliter striata, septata,  $45,2-576,5 \mu$  longa, dichotome ramosa, verticillis plerumque e ramis primariis, 2-4 compositis instructa, tunc ter quaterve dichotome ramosa; rami ultimi  $3,3-5,5 \mu$  longi, cellulis terminalibus parvis,  $3,3-4,4 \mu$  diam., interioribus lobatis, lobo quoque macrosporangio praedito, usque ad  $30 \mu$  longo, sporas 4-7, plerumque 6 continente; inter macrosporangia juvenilia guttae in maturitate ad catenas sporarum exarescentes dispositae; sporangiosporae oblongae, terminales subconoidae,  $3,3-5,5 (7,7) \times 2,2-3,3 \mu$  plerumque  $4,5 \times 3,2$ , hyalinae; zygosporae non visae.

Colonies on *Mucor* species on YpSs at first white later turning grayish; vegetative mycelium becoming septate, much branched. Sporophore mostly erect, brownish with rhizoids at the base; main stalk  $2,2-5,5 \mu$  at the base and  $5,5-8,8 \mu$  in diameter at the tip, longitudinally striate, septate, septa perforate with a tubular projection at the opening; branched dichotomously mostly with whorls of 2-4 primary branches,  $45,2-576,5 \mu$  long; the later again branching into 3 or 4 successive dichotomies; ultimate branches  $3,3-5,5 \mu$  long; head cells small  $3,3-4,4 \mu$  in diameter, heart shaped in surface view, 4 or 5 lobed, each lobe with a merosporangium; the latter about  $30 \mu$  long, with spores 4-7 usually 6; drops of liquid exudated among the young

merosporangia which dry up on maturity of the chains. Sporangiospores oblong, last spore of the chain some what conical,  $3.3-5.5 (7.7) \times 2.2-3.3 \mu$ , mostly  $4.5 \times 3.2 \mu$ , colourless. Zygospores not seen.

Type: M-30, isolated from Rabbit dung kept at zoological garden, Lucknow; Culture deposited in Culture Collection Botany Department, University of Allahabad and as No. A-42035 at NRRL Peoria, Illinois, U.S.A.

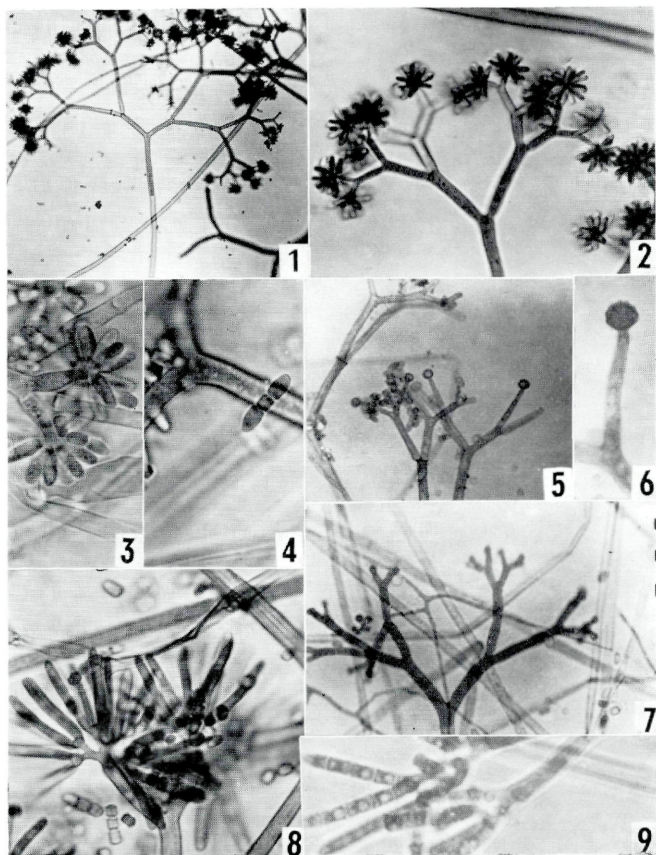
The heart shaped head cells found in this species are known in two species only viz., *P. xenophila* Dobbs and English (1954) and *P. microcephala* van Tieghem (1875). Out of these two, our isolate resembles with the latter species in the presence of rhizoids, striate sporangiophores, the size of the head cells, roughly varying from  $3-4 \mu$ , and peculiar septa characteristic of most species of *Piptocephalis*. However, the present isolate has much larger merosporangia with upto 7 spores in each chain as against smaller merosporangia with only upto 3 spores in each in *P. microcephala*. Dr. R. K. Benjamin, who kindly examined our culture, however, is of the opinion that this culture bears greater resemblance with *P. xenophila* than with *P. microcephala*, especially in the branching pattern of the ultimate branches of the sporophores, similarities in the shape and arrangements of the merosporangium. But it differs from this species also, in the larger general dimensions. In the present state of our knowledge of the genus it seems best to give a new specific name to our isolate.

### ***Piptocephalis* spec.**

Colonies on *Mucor* species on YpSs at first white later turning grayish; vegetative mycelium becoming septate, much branched. Sporophore mostly erect; without rhizoids at the base, the main stalk  $1.1-2.5 \mu$  at the base and  $5.5-10 \mu$  in diameter at the tip, longitudinally striate, usually septate, septa perforate with a tubular projection at the opening; branched dichotomously in whorls of 2-4, primary branches  $17.8-960.5 \mu$  long; the latter again, branching into 3 or 4 successive dichotomies; ultimate branches  $3.3-22.5 \times 2.2-3 \mu$  each bearing a depressed globose head cell at the apex  $3.3-5.5 \mu$  average  $4.4 \mu$  bearing upto 14 (20) merosporangia, maximum length  $11 \mu$ , each containing two ellipsoidal spores; sporangiospores  $2.5-5.5 \times 2.2-2.4 \mu$ ; spore heads dry. Zygospores not seen.

Type: M-31, isolated from the dung of a large squirrel of Malaya at Zoological Garden, Lucknow; culture deposited in Culture Collection, Botany Department, University of Allahabad, and as No. A-42036 at NRRL, Peoria, Illinois, U.S.A.

This isolate resembles with *P. lepidula* (Marchal) Benjamin in the presence of globoid head cells, dry-spore heads and usually two spored merosporangia but it differs from this species in the absence





of rhizoids at the base of the sporangiophore, presence of smaller ultimate branches and head cells, fewer number of merosporangia in each head cell and a different mode of development of merosporangia. However, this isolate shows the characteristic mode of development of the merosporangium usually seen in *Piptocephalis* as against the peculiar mode of development by budding shown for *P. lepidula* by Benjamin (1959).

As a similar isolate has already been described by Benjamin (1959) who still feels that much more information is needed for the isolate. We are therefore describing it as such leaving for him to give it a suitable name, whenever he thinks proper.

#### Acknowledgements.

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#### Explanation of plate XXVI.

1—6. *Piptocephalis* sp. — 1. Upper portion of a young sporophore showing the branching pattern  $\times 175$ . Upper portion of a young sporophore enlarged  $\times 600$ . 3. A portion of a sporophore bearing young merosporangia and one mature sporangium with the spores.  $\times 1380$ . 4. A three spored merosporangium  $\times 1350$ . 5. Upper portion of a sporophore enlarged with head cells at the apex of each branch  $\times 454$ . 5. A head cell at the apex of a branch enlarged 1600.

7—9. *Piptocephalis indica* sp. nov. — 7. Upper portion of a young sporophore with merosporangia and head cells not yet differentiated.  $\times 454$ . 8. Portion of a sporophore bearing young merosporangia and few sporangiospores  $\times 800$ . 9. Portion of a sporophore enlarged bearing many spored merosporangia  $\times 1300$ .

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