

FUNGI IMPERFECTI FROM MADRAS—III

Beltraniella gen. nov.

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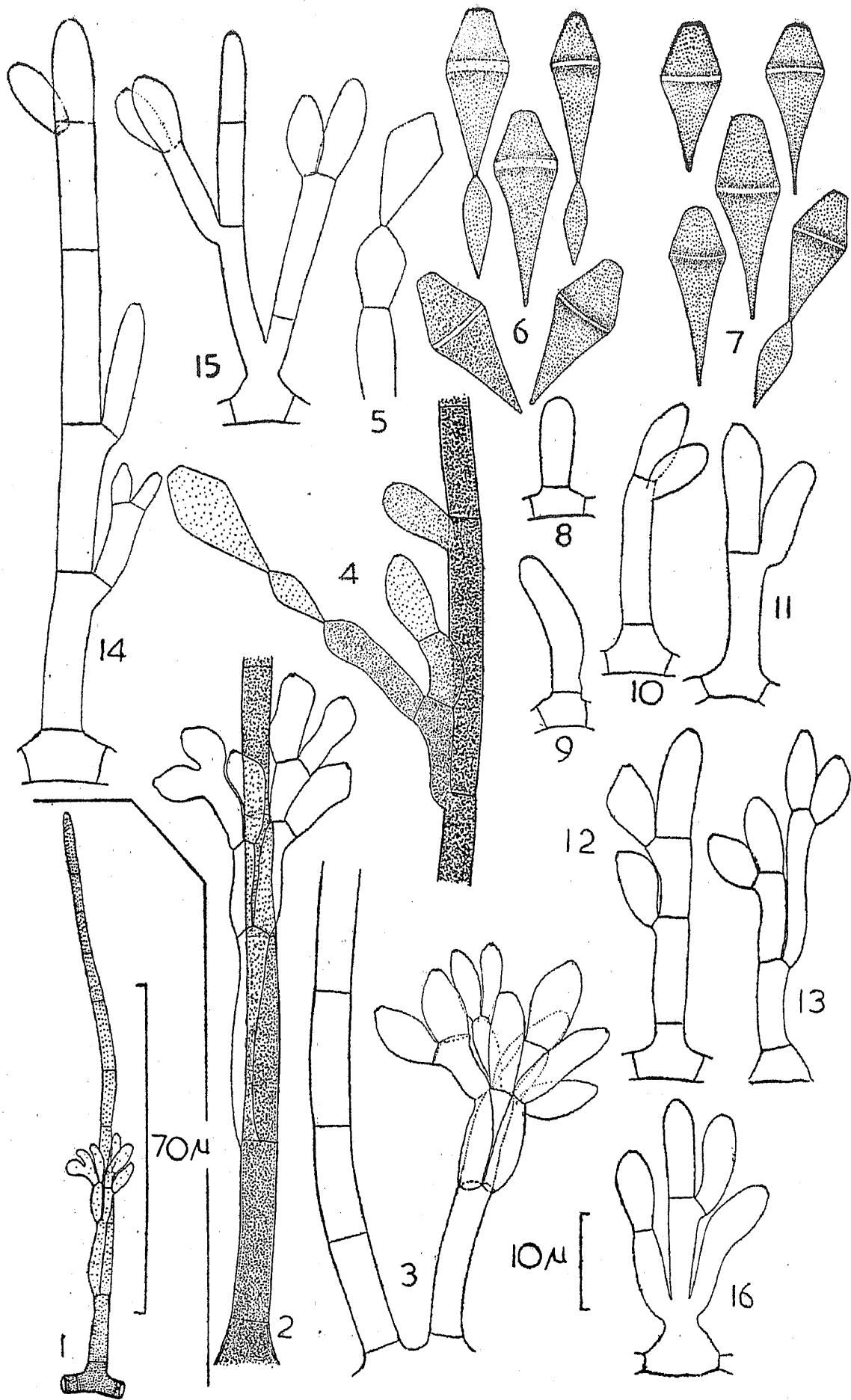
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AMONGST the fungi recently collected at Madras is an interesting Hyphomycete belonging to the Dematiaceae. Two collections of the fungus were made, both on dead and decaying leaves of *Odina wodier* Roxb. and the description given below is based on these two collections.

The fungus usually occurs on leaves in moist leaf litter. It forms effuse colonies on both sides of leaves. The colonies are bluish green when freshly collected, but turn brownish when dry. The conidiophores are solitary and arise as lateral branches from cells of repent hyphae. A mature conidiophore (Fig. 1) consists of a seta-like, thick-walled, rigid main axis which is erect, straight, dark-coloured, paler in colour towards the base and darker coloured towards the apex, up to 10-septate, tapering to a fine pointed or sometimes rounded tip, 120–230 μ long, 3.5–7 μ broad at the base. One or more cells of this main axis, but not the apical one, bear lateral branches just below the cross walls (Figs. 1, 4, 14). These lateral branches may give rise to further secondary, tertiary or quaternary branches, the ultimate branches being the spore-bearing cells which bear the conidia (Figs. 2, 4, 5). The branches are separated by septa, but are themselves rarely septate. The primary and, to a less extent, the secondary lateral branches tend to be erect and parallel to the main axis. The secondary and the ultimate branches show gradations in colour, the latter being much paler than the former. The ultimate branches (spore-bearing cells) are subhyaline, thin-walled and smooth in outline and each of them has a single scar indicating the insertion of the conidium which has fallen away, and measure 8–15 \times 3–5 μ . The conidia are deciduous and detached conidia have been seen in connection with smaller fusiform cells (Figs. 4, 6, 7), which I consider to be "separating cells", somewhat similar to what have been described for various species of *Beltrania* (Hughes, 1951 a; Subramanian, 1952). In one case a young conidium was seen attached directly to the conidiophore (Fig. 5); it is, therefore, likely that some conidia may not have "separating cells" or that the "separating cell" may be formed after the conidium develops. The separating cell is deciduous, fusiform, smooth-walled, hyaline to subhyaline,



Figs. 1-16. *Beltraniella odinae*. Figs. 1, 2, 4 and 7 from Herb. M.U.B.L. No. 410; other figs. from Herb. M.U.B.L. No. 377. For explanation, see text.

somewhat sharply tapering to a pointed apex (on which the conidium is borne), gradually tapering to a pointed base (where it is attached to the spore-bearing cell), $11-18 \times 3-5 \mu$ (Fig. 4). A single separating cell is borne at the tip of each spore-bearing cell. The conidia (Figs. 6, 7) are acrogenous, produced on separating cells, top-shaped, smooth-walled, subhyaline to faintly coloured, one-celled with a pale band where they are broadest, attached by their pointed ends, deciduous, 23×7.6 ($18-26 \times 6-9$) μ .

The development of the conidiophore appears to be as follows. The conidiophore arises as a lateral outgrowth from a cell of the repent hypha, and is hyaline when young. Each outgrowth elongates, and subsequently a cross wall is formed near its base (Fig. 8) separating it from the parent cell of the repent hypha. A cross wall is later formed about the middle of the cell (Fig. 10). Sometimes the formation of the first cross wall is delayed (Fig. 11). A lateral branch may then arise from the lower cell just below the cross wall (Figs. 10, 11, 12) and this may give rise to the secondary branches, etc. (Fig. 13). The main branch elongates further and also becomes many-septate, and more lateral branches arise from the cells of the main branch immediately below the cross walls (Fig. 14), and the lateral branches in turn produce secondary, tertiary branches, etc. The main branch elongates further and develops into the thick-walled seta-like main axis (Fig. 1). A section of the colonised leaf shows a large number of young conidiophores with fewer mature seta-like conidiophores interspersed between them.

The important characteristics of the fungus described above are: (i) the seta-like, thick-walled, dark-coloured, septate conidiophore bearing lateral branches; (ii) the "separating cells" borne singly at the apex of the spore-bearing cells; (iii) the top-shaped, subhyaline to faintly coloured, one-celled conidia (with a pale band where they are broadest) produced acrogenously and attached singly by their pointed ends to the tips of the "separating cells".

The presence of seta-like structures, "separating cells" and one-celled conidia with pale bands indicates resemblance to some species of the genus *Beltrania* Penzig (see Hughes, 1951 *a*). However, this resemblance is superficial. For, the setæ in *Beltrania* are sterile, and the conidiophores are usually unbranched and bear conidia acropleurogenously; in my fungus the conidiophores are seta-like and there are no sterile setæ. Further, in my fungus the conidiophores bear lateral branches, the conidia being produced acrogenously at the tips of the ultimate branches. My fungus is, therefore, distinct from *Beltrania*.

Other genera which were considered in the search for a suitable name for the fungus were: *Pseudobeltrania* Hennings; *Chatopsis* Greville; *Chatopsella* Hoehnel; *Mesobotrys* Saccardo; *Menispora* Pers.; *Menisporopsis* Hughes; *Monilochaetes* Harter; and *Verticicladium* Preuss.

The genus *Pseudobeltrania* was established for *P. cedrelæ* by Hennings (1902). I have not seen a specimen, but the description (Hennings, 1902, p. 310) indicates that the conidiophores are inflated and the conidia are two-celled. My fungus is therefore not congeneric with *Pseudobeltrania*.

Of the other genera, *Chatopsis*, *Chatopsella*, *Mesobotrys* and *Verticicladium* have recently been discussed in some detail by Hughes (1951*b*, 1951*c*) after a careful study of specimens and the fact that these genera are therefore now better known minimises considerably the uncertainties usually accompanying comparisons based on descriptions alone. The genus *Chatopsis* Greville resembles my fungus in having conidiophores with a rigid, erect main axis and lateral branches; but it differs from my fungus in having two-celled conidia which are oblong-cylindric to cylindric and are produced in groups on the "phialides". In my fungus a spore-bearing cell produces a single conidium acrogenously, and repeated production of conidia from the same spore-bearing cell as in the case of *Chatopsis* has not been seen. Further, unlike *Chatopsis*, the apex of the mature conidiophore is always sterile. *Chatopsella* Hoehnel, according to Hughes (1951*b*), is probably a later synonym of *Chatopsis* and hence needs no further consideration in the present context. In *Mesobotrys* Sacc. the conidia, which are one-celled, are stated to be globose to ovoid and hence this genus again cannot accommodate my fungus. Moreover, *Mesobotrys* Sacc. is a later synonym of *Gonytrichum* Nees ex Wallroth (Hughes, 1951*b*) and the morphology of this fungus, as described in detail by Hughes (1951*b*), is so different from that of my fungus as to merit no further consideration here. The genus *Verticicladium* Preuss as typified by *V. trifidum* Preuss resembles my fungus in having a main stipe bearing lateral branches which ultimately end in a spore-bearing cell, but the apical cell of the stipe is fertile in *V. trifidum* and the conidia are oval and more than one conidium is produced from each spore-bearing cell. My fungus cannot therefore be placed in the genus *Verticicladium*.

The genus *Menispora* Pers. (Saccardo, 1886) is characterised by falcate conidia, and *Menisporopsis* (Hughes, 1952) by falcate conidia with appendages. Thus, either of these two genera cannot accommodate my fungus.

The genus *Monilochaetes* Harter was taken up for comparison since it has been cited as a synonym of *Chatopsis* Greville by Clements and Shear

(1931, p. 393). The type species, *Monilochaetes infuscans* (Ell. and Hals.) Harter produces, however, amerospores (Harter, 1916, p. 791) and is not congeneric with *Chaetopsis* which has didymospores (Hughes, 1951 *b*). Further, in *Monilochaetes infuscans* the conidia are produced acrogenously at the tips of unbranched conidiophores. My fungus, therefore, cannot be placed in this genus either.

In the light of the above facts it is considered necessary to place my fungus in a new genus. The name *Beltraniella* is chosen, from its superficial, but not true, resemblance to *Beltrania*.

***Beltraniella* Subramanian gen. nov.**

Pertinent ad Fungos Imperfectos, Hyphomycetes, Dematiaceæ, Amerosporas. Hyphæ subhyalinæ vel fusce coloratæ, septatæ. Conidiophori erecti, præditi axi principali instar setæ, crasse vallatæ, fusce coloratæ, septatæ, ramis lateralibus ornatæ. Rami laterales iterum ramosi, penultimæ ramificationes producentes conidia. Conidia turbini similia, subhyalina vel pallide colorata, uni-cellulata, acrogena, infixæ cellulis separantibus per acutum apicem.

Species typica sequens.

14. *Beltraniella odinæ* Subramanian sp. nov.

Coloniæ effusæ, ceruleo-virides vel griseæ in statu juniore, brunneæ in statu seniore. Conidiophori axi principali instar setæ præditi ramos laterales ferentis. Axis erectus, rectus, latus ad basim, desinens in acutum vel obtusum apicem, subhyalinus vel brunneus colore, fuscior ad apicem, usque decies septatus, crasse parietatus, 120–230 μ longus, 3.5–7 μ latus ad basim. Rami pallidiores colore quam axis, emergentes ex una vel pluribus cellulis axis (una excepta cellula apicali) immediate sub septa, iterum producentes ramificationes secundarias, tertiarias, vel quaternarias, 3–7 μ lati, longitudine variante. Conidia acrogena, singula ex cellula separante fusiforme producta, turbini similia, subhyalina vel pallide colorata, uni-cellulata, infixæ per apices acutos, decidua, 23 \times 7.6 (18–26 \times 6–9) μ .

Habitat in foliis emortuis *Odinæ wodieri* Roxb.; typus lectus in campo Botany Laboratory, Madras a K. Ramakrishnan and C. V. Subramanian die 25 mensis augusti 1951 et positus in herb. M.U.B.L. No. 377; lectus etiam a K. Ramakrishnan die 29 augusti 1952, Herb. M.U.B.L. No. 410.

***Beltraniella* Subramanian gen. nov.**

Fungus imperfectus, hyphomycete, Dematiaceæ, amerosporæ. Hyphæ subhyaline to dark-coloured, septate. Conidiophoré with a seta-like erect,

thick-walled, dark-coloured, septate main axis bearing lateral branches. Lateral branches further branched, the ultimate branches bearing the conidia. Conidia top-shaped, sub-hyaline to faintly coloured, one-celled, acrogenous, attached by their pointed ends to "separating cells".

Type species:

Beltraniella odinae Subramanian sp. nov.

Colonies effuse, bluish green to gray when fresh, brownish when dry. Conidiophore with a seta-like main axis bearing lateral branches. Axis erect, straight, broad at the base, tapering to a rounded or pointed apex, sub-hyaline to brownish in colour, darker coloured towards the apex, up to ten-septate, thick-walled, 120-230 μ long, 3.5-7 μ broad at the base. Branches paler in colour than the axis, arising from one or more cells of the axis (except the apical cell) just below the septa, giving rise to secondary, tertiary or quaternary branches, 3-7 μ broad, of variable length. Conidia acrogenous, produced singly on a fusiform "separating cell", top-shaped, sub-hyaline to faintly coloured, one-celled, attached by their pointed ends, deciduous, 23 \times 7.6 (18-26 \times 6.9) μ .

Habit: on decaying and dead leaves of *Odina wodier* Roxb., University Botany Laboratory campus, Madras; coll. K. Ramakrishnan and C. V. Subramanian, 25-8-1951 (Type) (Herb. M.U.B.L. No. 377); coll. K. Ramakrishnan, 29-8-1951 (Herb. M.U.B.L. No. 410).

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