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SOME DEMATIACEOUS HYPHOMYCETES FROM *EUCALYPTUS* LEAF LITTER

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RESUMEN

Bactrodesmium peruvianum sp.n., *Endophragmia cuneiformis* sp.n. y *Fuscophialis brasiliensis* gen. et sp.n. se describen, illustran y comparan con taxones cercanos.

The identity of microfungi associated with leaf litter of various *Eucalyptus* species is the subject of a continuing project, some results of which have already been published or are in press (Sutton, 1975b; Sutton & Hodges, 1975a, 1975b, 1975c, 1975d). The range of organisms now recognised from decomposing leaves of *Eucalyptus* species in Brazil includes about 50 named hyphomycetes and many more remain to be identified. Several of these, such as *Beltrania rhombica* O. Penzig, *Beltraniella portoricensis* (F. L. Stev.) Piroz. & Patil, *Hiospira* state of *Brooksia tropicalis* Hansf., *Codinaea* spp., *Gyrothrix* spp., *Hansfordia pulvinata* (Berk. & Curt.) Hughes, *Polyscytalum fecundissimum* Riess and *Zygosporium* spp. to name a few, are well-known as species capable of growth and sporulation on a wide variety of different substrates, including the leaf litter of various hosts. There are however many species which at the moment appear to be peculiar to *Eucalyptus*, and it is in this category that the three species described in this article belong. Only further collections of *Eucalyptus* litter from other geographical areas will show if the species are restricted to South America, and it is only the analysis of species composition in leaf litter of other hosts originating from the tropics and subtropics especially that will determine whether these species are indeed restricted to *Eucalyptus*. This particular field of research is most rewarding as Pirozynski & Patil (1970), Yokoyama & Tubaki (1973) and Matsushima (1971)

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have shown, and the high proportion of named species in the present study is due in no small measure to the published work of these authors.

Bactrodesmium peruvianum sp. nov.

Sporodochia separata, super ostiola ascomatum immaturorum formata, nigra, nitida, punctiformia, usque ad 85 µ diam. Mycelium

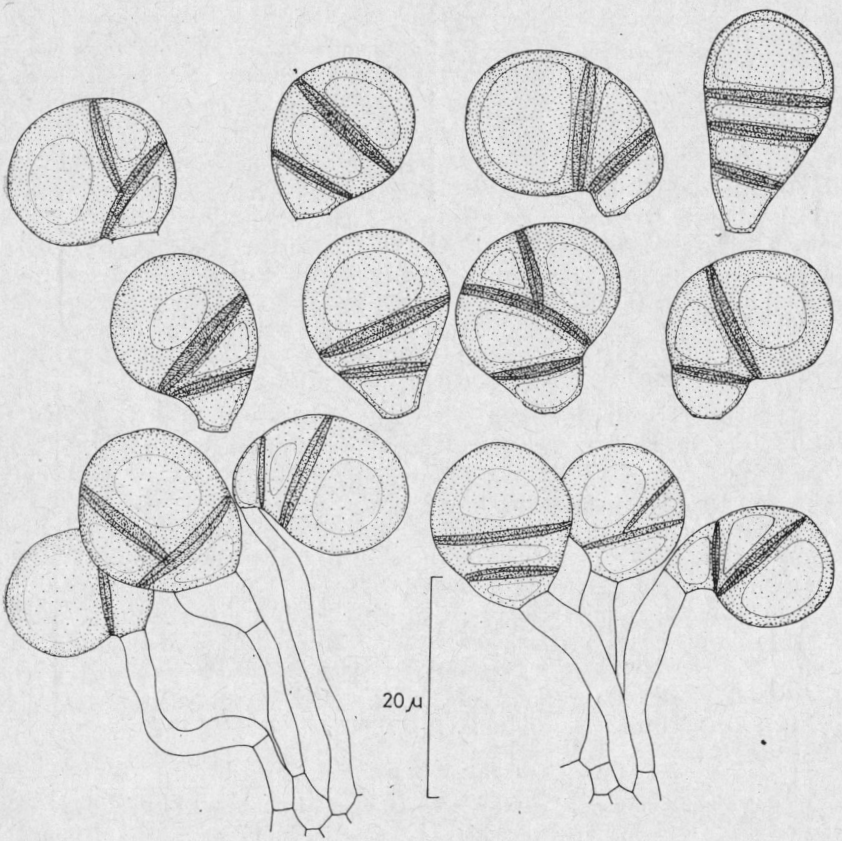

Fig. 1. — *Bactrodesmium peruvianum*, conidia and conidiogenous cells.

immersum, sparsum, ex hyphis ramosis, septatis subhyalinis vel pallide brunneis, laevibus 2-3 µ crassis compositum. Conidiophora simplicia, basim versus ramosa, flexuosa, hyalina vel pallide brunnea, laevia, 1-2 septata, basim versus decrescentia sed plerumque cylindrica, 17-28 × 2-3.5 , ex cellulis superioribus sporodochiorum oriunda. Cellulae conidiogenae holoblasticae, determinatae, discretae vel super conidiophororum formatae, cylindricae, laeves, hyalinae vel pallide brunneae.

Conidia singula, solitaria, in cellulis conidiogenis oblique formata, pyriformia vel obovoidea vel frequenter et dorsiventraliter curvata, cellula basali saepe pallidiora, basim truncatam versus valde decrescentia, cellula apicali maxima, obtusa et interdum septo obliquo divisa, 2-3 euseptata, laevia, luminibus deminutis, 14-20 × 11.5-13.5 µ.

In foliis emortuis Eucalypti Cuzco, Peru, comm. C. S. Hodges, 15 Sept. 1974, IMI 188854e, holotypus.

Sporodochia separate, formed over the ostioles of immature ascomycetes, punctiform, black, shining, up to 85 µ diam. *Mycelium* immersed, sparse, composed of branched, septate, subhyaline to pale brown, smooth hyphae, 2-3 µ wide. *Conidiophores* simple, branched only at the base, flexuous, hyaline to pale brown, smooth, 1-2 septate, tapered towards the base but mostly cylindrical, 17-28 × 2-3.5 µ, formed from the upper cells of the sporodochia. *Conidiogenous cells* holoblastic, determinate, discrete or terminal on conidiophores, cylindrical, smooth, hyaline to pale brown, each forming a conidium at the apex. *Conidia* single, produced obliquely from the conidiogenous cells, pyriform to obovoid or more frequently curved dorsiventrally, brown with the basal cell often paler, tapered markedly to the truncate base, apical cell largest, rounded and sometimes divided by an oblique septum, 2-3 euseptate, lumina often reduced, smooth, 14-20 × 11.5-13.5 µ.

The only *Bactrodesmium* described from *Eucalyptus* is *B. clavulatum* Cke & Harkn., a species that will be placed in *Polyschema* Upadhyay by Ellis (1976). Of those *Bactrodesmium* species still maintained in the genus, *B. peruvianum* only resembles *B. obliquum* Sutton (1967, 1973), inasmuch as some conidia have oblique or longitudinal septa. As pointed out by Sutton (1967) the presence of longitudinal conidial septa in *Bactrodesmium* is unusual, thus the addition of a second species to the genus with this feature is worthy of note. *B. obliquum* and *B. peruvianum* can not only be separated on conidial size (23-33.5 × 16-21.5 µ compared with 14-20 × 11.5-13.5 µ respectively), they differ considerably in morphology, as a comparison of their illustrations clearly shows.

Endophragmia cuneiformis sp. nov.

Coloniae effusae, pilosae, sparsae. Mycelium superficiale vel immersum, ex hyphis septatis, brunneis, laevibus, 1.5-4 µ crassis compositum. Conidiophora macronemata, mononemata, singula, recta, atro brunnea sed apicem versus pallidiora, cylindrica, laevia, 2-3 septata, usque ad 45 µ longa × 3-4 µ crassa, ad basim 5-6 crassa. Cellulae conidiogenae holoblasticae, annellidicae, terminales, in conidiophoris incorporatae, indeterminatae, cum 5-6 proliferationibus terminalibus successivis; cupulae absentes. Conidia solitaria, sicca, acrogena, cuneiformia vel cylindrica, laevia, pallide brunea, ad apicem obtusa et ad basim truncata, recta, (4)5 distoseptata, septis duobus basalibus incrassatis et in conidiis cylindricis septo medio incrassato, luminibus

deminutis, 18.5-22.5 × 7-8.5 µ (conidia cylindrica 22-25.5 × 4.5-5 µ). In foliis emortuis Eucalypti tereticornis, Monte Dourado, Pará, Brasil, C. S. Hodges, 20 June 1974, IMI 186975b, holotypus.

Colonies effuse, hairy, sparse. *Mycelium* superficial or immersed, composed of branched, septate, brown, smooth hyphae of variable thickness, 1.5-4 µwide. *Conidiophores* macronematous, mononematous, single, straight, dark brown at the base, becoming lighter towards the apex, cylindrical, smooth, 2-3 septate, up to 45 µ long × 3-4 µ wide, swollen at the base to 5-6 µ wide. *Conidiogenous cells* holoblastic, annellidic, integrated, terminal, indeterminate, with 5-6 percurrent proliferations, irregularly spaced. Flared cups apparently absent. *Conidia* solitary, dry, acrogenous, cuneiform to cylindrical, smooth, pale brown,

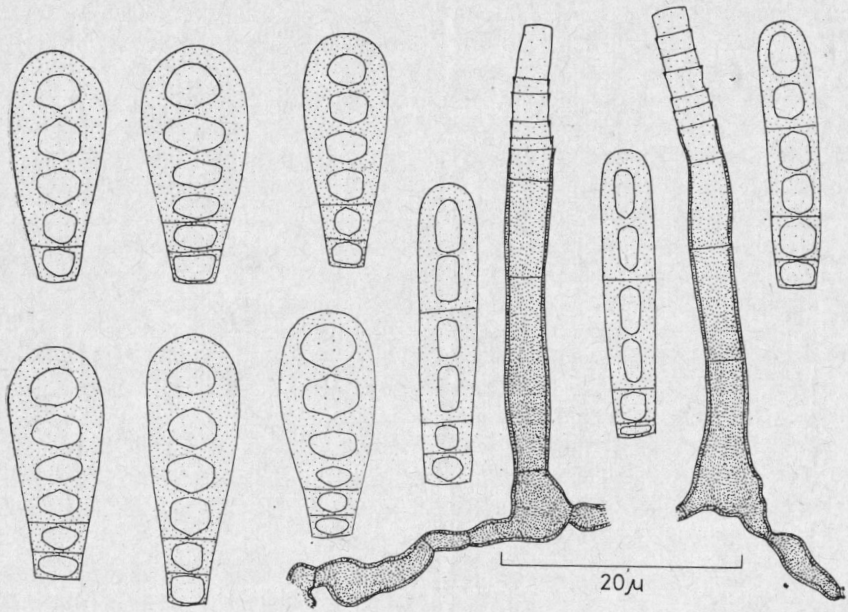

Fig. 2. — *Endophragmia cuneiformis,* conidia and conidiophores.

apex obtuse, base truncate, straight, (4) 5 distoseptate, with the two lower septa thickened in normal conidia and in abnormal cylindrical conidia with the penultimate apical septum also thickened, lumina reduced, particularly in the upper four cells, 18.5-22.5 × 7-8.5 µ (cylindrical conidia 22-25.5 × 4.5-5 µ).

Of those species already described in *Endophragmia* Duvernoy & Maire, *E. cuneiformis* most closely resembles *E. hyalosperma* (Cda) Morgan-Jones & Cole, *E. boothii* M. B. Ellis, *E. parva* M. B. Ellis ined, and *E. coronata* Sutton, since all these species have distoseptate cuneiform conidia (Sutton, 1975a). *E. coronata* is quite distinct from

the other species because of the apical coronate ornamentation on the conidia. *E. parva* has relatively small 1-2 distoseptate conidia, 15-17 × 3-3.5 μ, whilst *E. hyalosperma* conidia are 4 distoseptate and 20-29 × 10-13 μ, and *E. boothii* conidia are 3 distoseptate and 22-30 × 11-14 μ. *E. cuneiformis* clearly differs in size of conidia and septation. It does however share one similarity with *E. coronata* which is the tendency for some conidia to be longer, narrower and cylindrical rather than cuneiform.

FUSCOPHIALIS gen. nov.

Coloniae effusae. *Mycelium* plerumque superficiale ex hyphis ramosis, septatis, brunneis, laevibus compositum. *Conidiophora* macronemata, mononemata, non ramosa, recta, flexuosa vel irregulariter contorta, laeves, septata, brunnea. *Cellulae conidiogenae* in conidiophoris incorporatae raro discretae, demum lageniformes, intercalares vel terminales, raro laterales, sympodiales, polyphialidicae, omnes collo definito fusco. *Conidia* enteroblastica, semi-endogena, acropleurogena, simplicia, recta, apicem obtusum versus deminuta, pallide brunnea, laevia, septata, ad basim leviter fuscata et incrassata. Species typica *Fuscophialis brasiliensis* Sutton.

Colonies effuse. *Mycelium* mostly superficial, composed of branched, septate, brown, smooth hyphae. *Conidiophores* macronematous, mononematous, unbranched, straight, flexuous or irregularly contorted, smooth, septate, brown. *Conidiogenous cells* integrated, rarely discrete, then lageniform, intercalary or terminal, rarely lateral, sympodial, polyphialidic, each with a distinct brown collarette. *Conidia* enteroblastic, semi-endogenous, acropleurogenous, simple, straight, tapered to a rounded apex, pale brown, smooth, septate, darker and thickened at the base.

Fuscophialis brasiliensis sp. nov.

Coloniae effusae, sparsae. Mycelium perumque superficiale, ex hyphis ramosis, septatis, brunneis, laevibus, 1.5-3 μ crassis compositum. Conidiophora macronemata, mononemata, non ramosa, singula, recta, flexuosa vel irregulariter contorta, laeves, 0-7 septata, pallide brunnea vel atro brunnea, apicem versus pallidiores, 11-110 × 6-2 μ. Cellulae conidiogenae 7-20 μ longae, in conidiophoris incorporatae, raro discretae demum lageniformes, intercalares vel terminales, raro laterales, sympodiales, polyphialidicae, omnes collo definito fusco usque ad 1.5 μ diam. Conidia enteroblastica, semi-endogena, acro-pleurogena, simplicia, recta, navicularia, versus apicem obtusum deminuta, pallide brunnea, laevia, 1-3 septata, ad basim leviter fuscata et incrassata, 18-28.5 × 2-2.5 μ.

In foliis dejectis Eucalypti salignae, Aracruz, Brazil, 19 Jan. 1973, I.A.S. Gibson, IMI 173096d, holotypus.

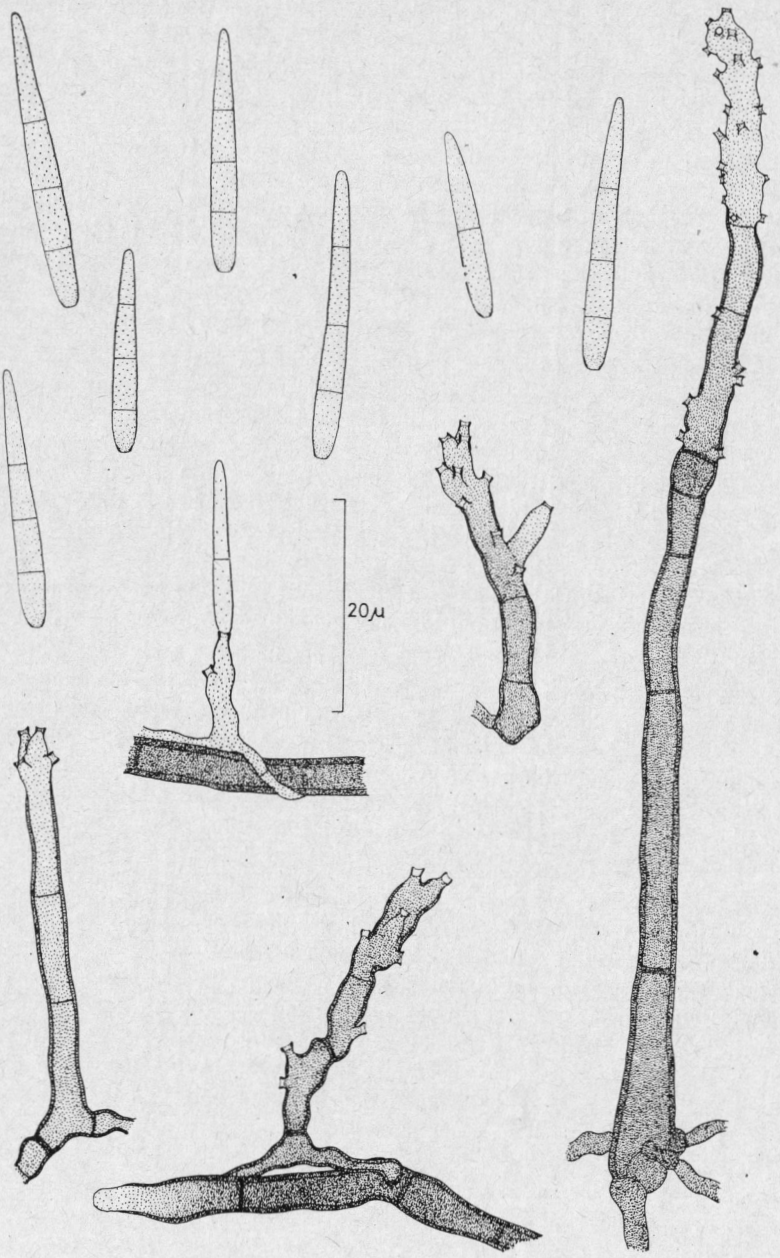

Fig. 3. — *Fuscophialis brasiliensis,* conidia and conidiophores.

Colonies effuse, sparse. *Mycelium* mostly superficial, often overgrowing hyphae of other fungi, composed of branched, septate, smooth-walled, brown hyphae 1.5-3 μ wide. *Conidiophores* macronematous, mononematous, unbranched, single, straight, flexuous, or somewhat irregularly contorted, smooth, 0-7 septate, pale-, medium-, or dark-brown, often paler towards the apex, 11-110 × 2-6 μ. *Conidiogenous cells* 7-20 μ long, integrated, intercalary or terminal, very rarely discrete or lateral and then lageniform, sympodial, polyphialidic with 1-18 apertures, each with a welldefined dark collarette up to 1.5 μ diam. *Conidia* enteroblastic, semi-endogenous, acropleurogenous, simple, straight, navicular, tapered gradually towards the obtuse apex, pale brown, thin-walled, smooth, 1-3 septate, base slightly thickened and darker, 18-28.5 × 2-2.5 μ.

In the current concept of enteroblastic phialidic conidial development (Subramanian, 1971) a number of conidiogenous cells are recognised that differ in presence or absence of collarettes around the phialidci apertures. When present, collarettes show conisderable diversity in their morphology. One type which occurs in very few genera is the relatively short collarette that is more deeply pigmented than the phialide itself. Such collarettes are known in some species of *Gliomastix* Guéguen, *Phialophora* Medlar and *Fusariella* Sacc., and in *Eladia saccula* (Dale) G. Smith and *Angulimaya sundara* Subram. & Lodha (Ellis, 1971; Barron, 1968).

The smooth brown collarettes in *Fuscophialis brasiliensis* are similar to those known in *Eladia* and *Angulimaya* but neither in these genera nor in *Gliomastix* and *Phialophora* are the conidia septate, a characteristic feature of *F. brasiliensis*. Conidia in *Fusariella* species however are usually up to 3-septate but they are catenate, and conidiophores are colourless or pale brown with the conidiogenous cells monophialidic and often discrete.

Specimens examined: —on dead leaves of *Eucalyptus saligna*, Aracruz, Brazil, 19 Jan. 1973, I. A. S. Gibson, IMI 173096*d*, holotype; *E. citriodora*, Aracruz, Espirito Santo, Brazil, 30 May 1973, C. S. Hodges, IMI 176988*a*; *E. urophylla*, Linhares, Espirito Santo, Brazil, 31 May 1973, C. S. Hodges, IMI 176989*b*; *E. grandis*, Serra, Espirito Santo, Brazil, 11 Dec. 1973, IMI 181536*d*; *E. robusta*, Florinopolis, Santa Catarina, Brazil, 20 May 1975, IMI 194554*e*; Natal, Rio Grande do Norte, Brazil, 22 Feb. 1975, IMI 192515*d*.

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