

## A new species of *Claussenomyces* (Helotiales) from southern South America

IRMA J. GAMUNDI

ANDREINA L. GIAIOTTI

CONICET

Departamento de Botánica

Centro Regional Universitario Bariloche

Universidad Nacional del Comahue

C.C. 1336

8400. San Carlos de Bariloche

Río Negro, Argentina.

**Abstract** *Claussenomyces pleomorphicus* is proposed as a new species, characterised within the genus by lack of an ionomidotic reaction, ascospore size, and the production of anamorph conidiomata in nature, with a microstructure different from all known species belonging to the genus.

**Keywords** Helotiales; *Claussenomyces pleomorphicus*; new species; teleomorph-anamorph; southern South America

### INTRODUCTION

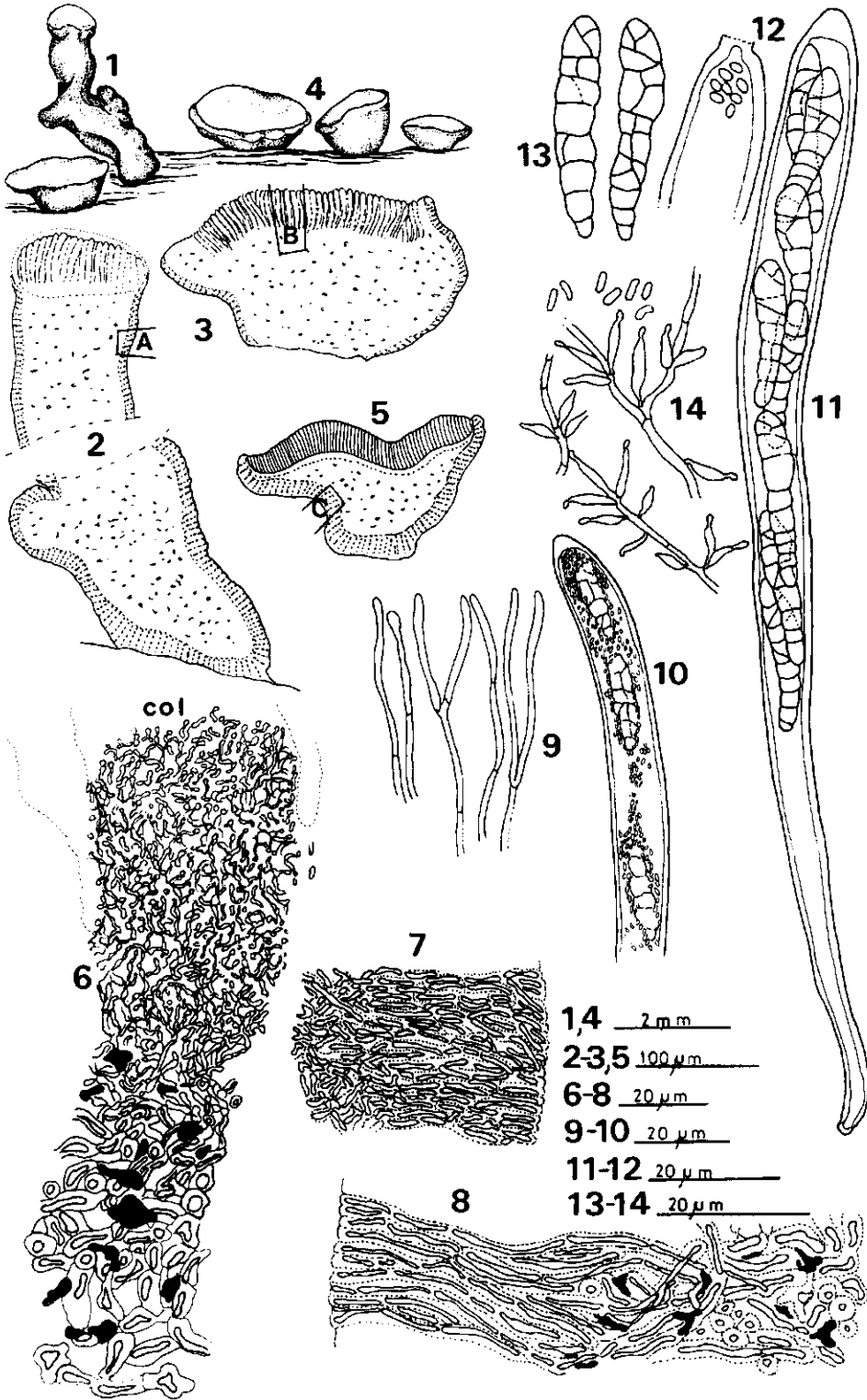
When describing three new species of *Claussenomyces* Kirschst. from the Canary Islands and Madeira, Ouellette & Korf (1979) stressed the fundamental features for the genus, including the production of copious gel in the excipulum, multicellular ascospores, and the formation of ascocoonidia. They recognised nine species in the genus, emphasising in their key the importance of ionomidotic reaction as a diagnostic character for delimitation of groups of species. Ouellette & Korf (1979) excluded *Claussenomyces salviicolor* (Ellis & Everh.) Korf & J.R.Dixon from the genus because of the unicellular ascospores, lack of ascocoonidia,

and excipular structure, an opinion that we share. They did not treat *C. australis* G.W.Beaton (Beaton & Weste 1978) from Australia, which has unicellular, ellipsoidal ascospores and gives ionomidotic reaction. Despite its ivy green colour and the gelatinised tissues, we exclude it from *Claussenomyces* because of the absence of ascocoonidia and the one-celled ascospores. Zhuang (1988) transferred this species to *Ionomidotis* Durand establishing a new combination: *Ionomidotis australis* (G.W.Beaton) W-Y.Zhuang. It has been demonstrated (Gamundí 1991) that *Ameghiniella australis* Speg. is an early synonym of *Ionomidotis chilensis* Durand. We think that *I. australis* (G.W.Beaton) W-Y.Zhuang should be transferred to *Ameghiniella*, since it is closest to *A. australis* Speg., type species of the genus. This should confirm once more a gondwanic correlation between two species of subantarctic distribution. However, a nomenclatural problem arises (homonymy) and the final solution will be delayed until the type species of *C. australis* G.W.Beaton is examined.

Other species have since been included in the genus: *C. olivaceus* (Fuckel) Sherwood (Hawksworth & Sherwood 1981), *C. pini* A.Funk (Funk 1986), *C. hydnicola* (Berk. & Broome) Korf & W-Y.Zhuang (Korf & Zhuang 1987). Iturriaga (1991) later placed *C. luteoviridis* Ouell. & Korf in synonymy with *C. imperspicuus* (Sacc., E.Bommer & M.Rousseau) T.Iturriaga and *C. pusillus* (Rehm) Korf & Abawi in synonymy with *C. tympanoides* (Ellis & Everh.) T.Iturriaga & Korf. All these species have multicellular ascospores and ascocoonidia. Twelve species are recognised in the genus.

Besides ascocoonidia some species produce conidiomata. Höhnell (1905) assigned a stilbaceous anamorph, *Dendrostilbella prasinula* Höhn., to *Claussenomyces prasinulus* (P.Karst.) Korf & Abawi. Funk (1986) found in culture a synnematos *Dendrostilbella*-like for *C. pini*. Pycnidial conidiomata have been associated with *C. pseudotsugae* (Ouellette & Pirozynski 1974) and *C. olivaceus* (Hawksworth & Sherwood 1981).

In Argentina, only one species has so far been



recorded, *C. atrovirens* (Pers.) Korf & Abawi on stumps of *Eucalyptus viminalis* in Buenos Aires Province (Romero 1987). This species has been found also by the authors in Tierra del Fuego, the southernmost tip of South America, at 52° 10'–55° S, growing on fallen branches of *Nothofagus antarctica* (Forst.) Oerst. Another species of *Claussenomyces* was collected in that province, proposed here as new.

## METHODS

Methods here employed are the same as described in Gamundí & Giaiotti (1994).

## DESCRIPTION

### *Claussenomyces pleomorphicus* Gamundí & Giaiotti sp. nov. Fig. 1–14.

Apothecia solitaria vel gregaria, superficialia, sessilia vel subsessilia, turbinata vel lenticularia, 1–2 mm diam. × 0.1–1.0 mm alt., prasina versus viridia, hymenio plano dein undulato, margine incrassato; consistentia gelatinosa. Excipulum corticale gelatinosum, 50–100 µm crass., textura oblita, hyphis perpendiculariter superficiei dispositis. Excipulum medullare textura intricata, hyphis in matrice gelatinosa immersis cum pigmento viride amorpho disperso. Subhymenium non gelatinosum. Paraphyses filiformiae, hyalinae, ascis longiores, 1.4–2 µm diam.; pigmento viridi amorpho supra gelatinam hymenii. Asci 8-sporei, cylindrico-clavati, iodo non coerulescentes, (126)162–175 × (8.7)10.0–12.6 µm. Ascosporeae hyalinae, 1–2 seriatas, multicellulares, submuriformes, 8–11 septis transversis, (19.4)22.3–29.0 × 4.8–5.8 µm. Ascoconidia hyalina, ovoidea vel ellipsoidea, 1.8–2.0 × 0.5–0.9 µm. Conidiomata gelatinosa, synnemata vel sporodochia, capitulis prasinis et cum stipitibus atroviridibus, cortice 30–100 µm crass.; conidiophora in muco immersa, ramificata; cellulae conidiogenae monophialidica, lageniformes vel pyriformes, 3.4–4.8 × 1.4 µm; conidia hyalina, acrogena, bacilliformia vel allantoidea, 1-cellularia, 1.8–2.9 × 0.5 µm.

HOLOTYPUS LPS 45268.

Apothecia and conidiomata developing on

decorticated fallen branches, staining the wood green.

Apothecia solitary or gregarious, superficial, sessile to subsessile, lenticular to turbinata, 1–2 mm diam. × 0.1–1.0 mm high; receptacle glabrous, greenish (*viridis*), drying dark green (*atroviridis*); hymenium at first plane, then convex to undulate; margin thick and even; gelatinous, drying horny. No ionomidotic reaction. (Fig. 4–5).

Ectal excipulum gelatinised, 50–100 µm thick, of *textura oblita* with hyphae perpendicular to the surface, hyaline to greenish “sub lente”, lumen 1.0–1.5 µm (Fig. 5C, 8). Medullary excipulum of *textura intricata*, the hyphae embedded in a gelatinous matrix containing scattered amorphous granules of green pigment (Fig. 8). Subhymenium 30–40 µm thick, not gelatinised, of *textura intricata*, the hyphae thin-walled staining with lactic blue. Paraphyses filiform, hyaline, longer than asci, simple or branched at the apex, embedded in a hymenial gel, 1.4–2 µm diam. (Fig. 9). Asci 8-spored, cylindrical-clavate, with thickened walls up to 1 µm, apex thickened, non amyloid, variable in length, (126)162–175 × (8.7)10–12.6 µm (Fig. 10–12). Ascospores hyaline, 1–2 seriate, claviform, flexuose, multicellular, submuriform, constricted at the 8–11 transverse septa, longitudinal septa at the wider portion, (19.4)22.3–29.0 × 4.8–5.8 µm (Fig. 13). Ascoconidia born from ascospores inside the ascus, firstly in coexistence with them, finally completely filling the ascus, hyaline, ellipsoidal to ovoid, 1.8–2.0 × 0.5–0.9 µm (Fig. 10, 12).

Conidiomata synnematosus to sporodochial, on host tissue adjacent to the apothecia; capitulus/disc light green (*prasinus*), stipe darker (*atroviridis*) (Fig. 1–3). Synnemata and sporodochia determinate, corticated, the surface covered with green granules; cortex composed of a palisade of *textura oblita*, 30–100 µm thick, hyphae with lumen 1.0–1.5 µm diam.; axis of synnema and inner part of sporodochium of *textura intricata*, hyphae embedded in a gelatinous matrix with scattered green granules (Fig. 6, 7). Capitulus/disc in vertical section comprising mucilaginous columns with conidiophores irregularly disposed (Fig. 3B, 6). Conidiophores sympodially

◀ Fig. 1–14 *Claussenomyces pleomorphicus* Gamundí & Giaiotti. Fig. 1. Conidiomata synnematosus and sporodochial. Fig. 2. Diagrammatic section of a synnematosus conidioma, showing corticated stipe (A). Fig. 3. Diagrammatic section of a sporodochial conidioma with conidiogenous columns (B). Fig. 4. Apothecia. Fig. 5. Diagrammatic section of an apothecium: C, excipulum. Fig. 6. Detail of B showing a conidiogenous column (col). Fig. 7. Detail of A. Fig. 8. Detail of C. Fig. 9. Paraphyses. Fig. 10. Ascus with ascospores and ascoconidia. Fig. 11. Ascus with ascospores. Fig. 12. Dehiscent ascus with ascoconidia. Fig. 13. Mature ascospores. Fig. 14. Conidiophores, phialides, and conidia.

branched, hyaline; conidiogenous cell monophialidic, terminal or lateral, lageniform to pyriform, opposite to verticillate,  $3.4\text{--}4.8 \times 1.4 \mu\text{m}$ ; conidia hyaline, acrogenous, bacilliform to allantoid,  $1.8\text{--}2.9 \times 0.5 \mu\text{m}$  (Fig. 14).

HABITAT: lignicolous, on decorticated fallen branches.

MATERIAL: Argentina, Tierra del Fuego, Ensenada, I. J. Gamundí & A. L. Giaiotti, 22 Mar 1975, on decorticated fallen branches, in *Nothofagus pumilio* and *N. betuloides* forest, LPS 45268.

ETYMOLOGY: *pleomorphicus*, alluding to the two different anamorphs, ascoconidia and conidia, the latter organised in synnemata and sporodochia.

## DISCUSSION

The new species belongs to a *Claussenomyces*-group with submuriform ascospores formed by *C. canariensis*, *C. clavatus*, *C. imperspicuus*, *C. pseudotsugae*, and *C. atrovirens*. In the first two species the apothecia are not greenish and give an ionomidotic reaction, absent in our species. *C. imperspicuus* and *C. pseudotsugae* have a pycnidial anamorph, which is not the case of the Argentinian collection. The closest species regarding apothecial and ascospore morphology is *Claussenomyces atrovirens* (Pers.) Korf & Abawi (Korf & Abawi 1971), but this European species lacks conidiomata.

*C. prasinulus* and *C. pini* give a *Dendrostillbella*-like anamorph but differs by its 1–3 or 3-septate, fusoid ascospores and a distinct non corticated synnemata.

The Fuegian species is characterised by the simultaneous occurrence of apothecia and conidiomata, the latter either synnematosus or sporodochial. The synnemata agree with the determinate-type as defined by Seifert & Okada (1990), with the stipe corticated with a marginal palisade. However, they differ from the genera considered by these authors as having determinate synnemata (*Crinula* Fr., *Dennisiographium* Rifai, and *Coryne* S.F.Gray) because the conidiogenous area is distinctly organised in mucilaginous vertical columns. We did not find a form-genus covering this feature. As in *Holwaya-Crinula*, and *Ascocoryne-Coryne*, the tissues of the ascomata and conidiomata are homologous.

The idea that both morphs represent the same fungus is supported by their close association in nature, and the similarity in the gross morphology, pigmentation, consistency, and anatomical structure

of their respective fructifications; for example, ectal and medullary excipulum of the apothecium, and cortex and axis of the conidioma. The same situation occurs also in *Ascocoryne sarcooides* (Jacq.) J.W.Groves & D.E.Wilson and *Coryne dubia* (Pers.) S.F. Gray.

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