

Ceratostomella hyalocoronata, a new pyrenomycete from a stream in southern China

Patrik Inderbitzin

Department of Botany, University of British Columbia, Vancouver, British Columbia V6T 1Z4, Canada

Accepted for publication 2 March 2000

Ceratostomella hyalocoronata is described and illustrated as a new species from old decaying wood immersed in a stream in Guangdong Province, southern China. It is compared to *C. hyalostoma*, a temperate terrestrial species.

Key Words—East Asia; freshwater fungi; taxonomy; tropical mycology; Xylariales.

The genus *Ceratostomella* is a member of the Clypeosphaeriaceae in the Xylariales (Barr, 1990). It comprises ca. 10 mainly temperate species (Hawksworth et al., 1985). On an excursion to subtropical southern China, a new fungus belonging to *Ceratostomella* was found on decaying wood immersed in a small stream.

Materials and Methods

Decaying decorticated branches immersed in a small stream were collected, and returned in plastic bags to the laboratory for microscopic examination.

To obtain single ascospore isolates, an ascospore suspension was plated out on both CMA and PDA petri dishes, which were subsequently incubated at 25°C in the dark.

Results

Ceratostomella hyalocoronata Inderbitzin, sp. nov.

Figs. 1–8

Ascomata 250–420 × 300 μm, immersa vel erumpentia in strato singulo in stromate effuso. Paraphyses septatae, ramosae. Asci ca. 126.5 × 9 μm, unitunicati, cylindrici vel clavati, stipitati, cum annulo apicali inamyloideo. Ascosporae 19.5 × 4.5 μm, hyalinae, oblongae vel allantoidae.

Holotypus: specimen Z1.1 in ligno emortuo immerso in fluvio, Wu Gui Shan (UBC F13874).

Etym.: from Latin '*hyalinus*', hyaline and '*coronata*', with a crown, alluding to the appearance of the hyaline papilla.

Ascomata gregarious in old decorticated wood lying in a small stream, singly immersed to partly erumpent beneath a clypeus in an effuse stroma, 250–420 μm high and 300 μm wide, conical to hemispherical in transverse section (Fig. 1). Stroma effuse, comprising many ascomata, browning the surface of the substrate, delimited by a ventral and lateral brown line (Fig. 1). Clypeus covering erumpent part of single ascomata, up to 70 μm wide

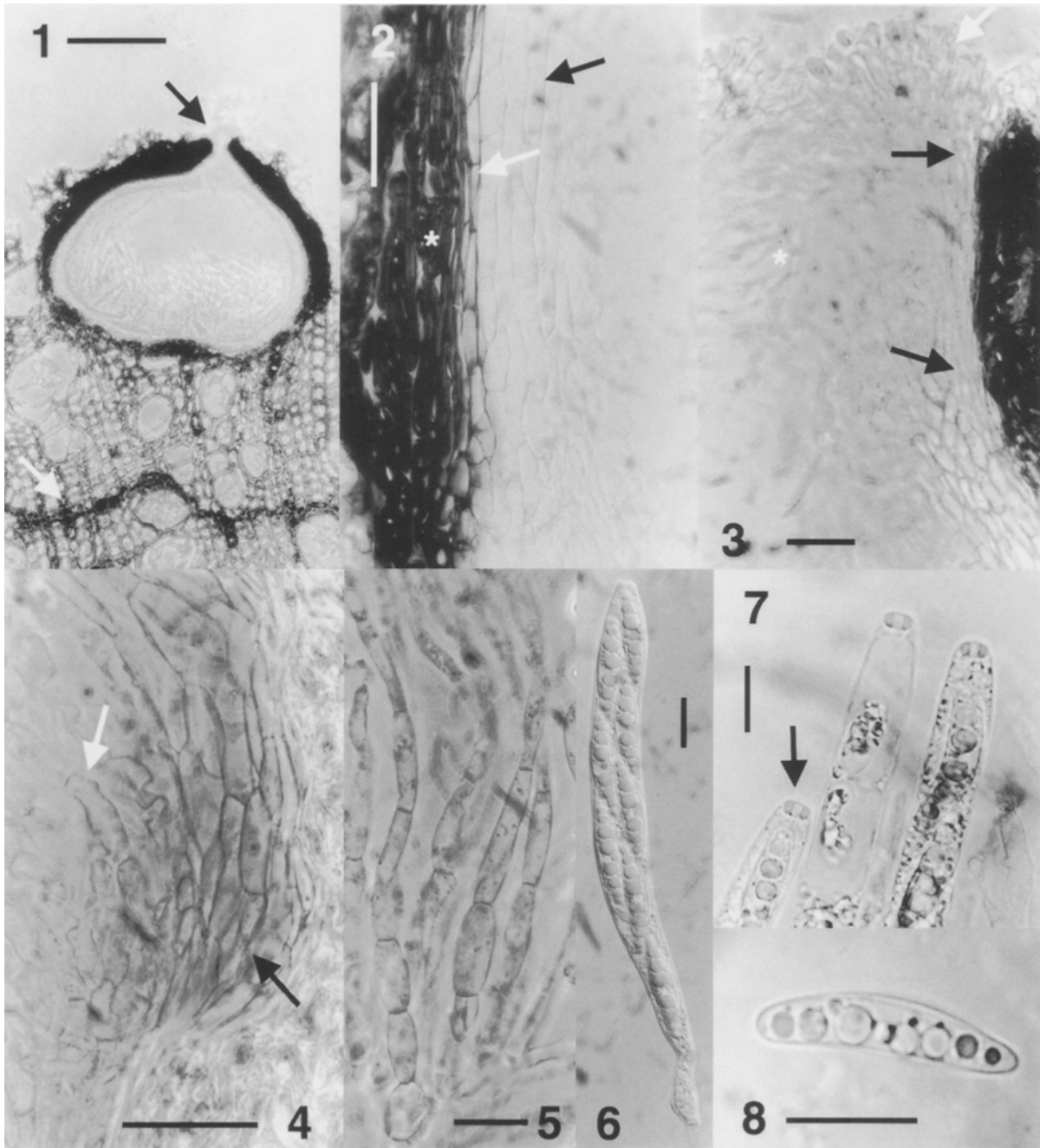
(Figs. 1, 2). Ascomatal wall consisting of a continuous inner layer, 2–30 μm wide, comprising up to 7 layers of elongate, thin-walled, hyaline cells forming a *textura angularis* in transverse section (Figs. 2, 3). In upper part, an up to 8 μm wide layer of elongate, narrow, light brown cells is present between the hyaline inner layer and the clypeus (Fig. 2). Papilla hyaline, up to 40 μm high and 70 μm wide, consisting of septate, 1–2 μm wide, parallel hyphae with slightly swollen apices (up to 3 μm wide) originating from the internal wall layer, periphysate (Figs. 1, 3). Periphyses ca. 35 × 2 μm (Fig. 3). Paraphyses with free apices, branched, septate, 5–7 μm wide at the base, 2–4 μm at the apex, constricted at basal septa only, longer than asci (Figs. 4, 5). Asci (107–)116–137.5(–142) × 7–11.5 μm (126.5 × 9 μm on average, n=20), 8-spored, unitunicate, thin-walled, cylindrical to slightly clavate, short-stalked, biseriate above, uniseriate below, with a large, refractive, -I apical ring, 1.5–2 × 3.5–4 μm, at maturity floating freely in the center cavity (Figs. 1, 6, 7). Ascospores (15–)16.5–23(–26) × 4–5 μm (19.5 × 4.5 μm on average, n=30), hyaline, smooth, thin-walled, slightly allantoid to straight, tapering towards the rounded apices, non-septate, with large oil globules (Fig. 8). Ascospores did not germinate in culture.

Habitat and distribution: Small stream at Wu Gui Shan, 15 km south of Zhongshan, Guangdong Province, People's Republic of China.

Holotype: At Wu Gui Shan, 15 km south of Zhongshan, Guangdong Province, China, on old decaying branch immersed in a small stream, leg. 8 November 1998, Eduardo M. Leañó and P. Inderbitzin (Holotype: UBC F13874 specimen Z1.1).

Discussion

In a revision of *Endoxyla*, Untereiner (1993) reinstated the genus *Ceratostomella*, and characterized it as follows: Ascomata immersed in host tissue, necks elongate, ascomatal wall pseudoparenchymatous. Asci



Figs. 1–8. Micrographs of *Ceratostomella hyalocoronata*.

Fig. 1: Transverse cryosection of ascoma. Note hyaline papilla (black arrow) topped with exuded asci, and stroma delimited by a dark line (white arrow). Fig. 2: Transverse cryosection of clypeus and upper ascomatal wall. Note ascumatal wall composed of hyaline, inner (black arrow) and dark outer (white arrow) wall layer. Clypeus marked by white asterisk. Fig. 3: Transverse cryosection of ostiole. Note hyaline hyphae (black arrows) originating from inner wall layer, and forming a papilla (white arrow).Periphyses marked with white asterisk. Fig. 4: Transverse cryosection of basal ascumatal wall. Note one-layered, hyaline ascumatal wall (black arrow) giving rise to paraphyses (white arrow). Fig. 5: Paraphyses. Fig. 6: Ascus. Note apical ring and stalk. Fig. 7: Ascus apices. Note apical ring (black arrow). Fig. 8: Ascospore. Figs. 2, 6, 7, 8: Differential interference micrographs, Figs. 1, 3–5: Phase contrast micrographs. Scale bars: Fig. 1 = 100 μm ; Figs. 2–8 = 10 μm .

are small, with an inamyloid apical ring, and loosen from the subhymenium at maturity. Ascospores hyaline, aseptate or uniseptate. Members of the genus are

hypersaprotrophic on old wood (Barr, 1993).

Ceratostomella hyalocoronata matches this generic definition, except for the absence of an elongate neck.

However, the papillae in *C. hyalocoronata* are very similar in morphology to the necks of *C. hyalostoma* (Munk) Untereiner, in that the constituting hyphae originate from the inner ascomatal wall layer, and the inside of the ostiole is lined with thin periphyses (Munk, 1966) (Fig. 3). Collections that correspond to *C. hyalostoma* with a short neck are known (M. E. Barr-Bigelow, Sidney, British Columbia, Canada, pers. comm.). *Ceratostomella hyalostoma* differs in smaller asci and ascospores which are finely spinulose (Munk, 1966).

Various fungi have at one time been placed in *Ceratostomella* (Schweinitz, 1834; Saccardo, 1882). Based on the literature, *C. hyalocoronata* differs by the combination of relatively large asci and ascospores, hyaline papilla, thin, pallid, basal ascomatal wall, and habitat.

Acknowledgements—I would like to thank Dr. L. L. P. Vrijmoed and Prof. E. B. G. Jones, City University of Hong Kong, for providing laboratory facilities, Prof. M. E. Barr for help with identification of the fungus and sharing unpublished notes, Mr. Wong Kwang-wah, Zhongshan, and Dr. Luo Wen, Hong Kong, for organizing the field trip, and communicating the name of the collection site, Dr. E. M. Leaño, Iloilo, for help with the collection

of the type material. An NSERC operating grant for partial support (Principal Investigator M. L. Berbee) is gratefully acknowledged.

Literature cited

- Barr, M. E. 1990. Prodrumus to nonlichenized, pyrenomycetous members of class hymenoascmycetes. *Mycotaxon* **39**: 43–184.
- Barr, M. E. 1993. Redisposition of some taxa described by J. B. Ellis. *Mycotaxon* **66**: 45–76.
- Hawksworth, D. L., Kirk, P. M., Sutton, B. C., et al. 1985. Dictionary of the fungi. CAB International, Wallingford, Oxon, UK.
- Munk, A. 1966. On some species of *Endoxyla* recently found in Denmark. *Bot. Tidskrift* **61**: 56–70.
- Saccardo, P. A. 1882. *Ceratostomella*. *Sylloge Fungorum omnium hucusque cognitorum* **1**: 408–413.
- Schweinitz, D. L. 1834. Tribe 22. *Ceratostomae*. *Trans. Amer. Philos. Soc.* **4**: 216.
- Untereiner, W. A. 1993. A taxonomic revision of the genus *Endoxyla*. *Mycologia* **85**: 294–310.