
***Planistromella opuntiae* sp. nov. from Queensland, Australia,
and a key to the known species**

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A new species of a dothideaceous ascomycete, *Planistromella opuntiae* is described and illustrated from Queensland, Australia. Species of *Planistromella* are known to occur on members of *Agavaceae*. This new species is found on *Opuntia*, a member of the family *Cactaceae*. It is easily separated from the other known species with 1-septate ascospores by its comparatively narrower ascospores.

Key words: Bitunicate ascomycete, *Dothideales*, new species, *Opuntia*, *Planistromella*, taxonomy.

Introduction

Barr (1996) erected a new family *Planistromellaceae* to accommodate six genera belonging to the *Dothideales* s. str. with uni- to multi-loculate ascostromata without a true peridium and consisting of interthecial hamathecium and schizogenously formed periphysate ostiole. The asci, ascospores and anamorphs are quite similar to those found in many members of the *Mycosphaerellaceae*. The six genera included in this family are *Eruptio* M.E. Barr, *Loratospora* Kohlm. and Volkm.-Kohlm., *Microcyclus* Sacc., *Mycosphaerellopsis* Höhn., *Planistroma* A.W. Ramaley and *Planistromella* A.W. Ramaley. An unidentified collection on *Opuntia* in herbarium BRIP from Queensland was found to have similar characters to the genera in *Planistromellaceae* and resembled the genus *Planistromella* in its ascostromatal, ascus and ascospore characters. *Planistromella* species are known only to occur on *Agave*, *Furcraea* and *Yucca*, all members of *Agavaceae*. Six species were recognised in the genus (Ramaley, 1993, 1995; Barr, 1996) with three species having *Kellermania* anamorphs (Ramaley, 1993, 1995). This new species is not identical to any of the known species, lacks an anamorph and is found on *Opuntia*, a member of *Cactaceae*.

Materials and Methods

Observations and measurements were made from dried preserved materials. Sections were cut using a freezing microtome, mostly at a thickness of 10 μm and mounted in lactofuchsin, and observed using brightfield and Nomarski differential interference contrast microscopy. Photomicrographs were taken using a digital camera (Leica DC200 with IM 1000 Multifocus Module).

Taxonomy

Planistromella opuntiae Sivan. & R.G. Shivas, **sp. nov.** (Figs. 1-6)

Etymology: specific epithet based on host genus name.

Laesio caulibusque depresso, plus minusve circulares vel subcirculares vel irregulares, amphigenae, dense dispersae vel coalescentes, usque 5 cm diam. *Ascstromata* solitaria vel aggregata, immersa, erumpentia, nigra, subglobosa, 200-250 μm lata, 140-300 μm alta, cum hypostroma basali, ostiolum depressum. *Hypostroma* 95-115 μm lata, 95-125 μm alta. Paries ascstromati usque 30 μm lati e cellulis atrobrunneis, crassitunicatis compositi, textura angularis formans. *Textura interthecii* evanescenti ubi asci maturi. *Asci* obclavati vel saccati, sessiles vel brevipedicellati, rectae vel curvatae, fissitunicati, bitunicati, octospori, fasciculati, 50-65(-75) \times 9.5-13 μm . *Ascospores* fusiformes, hyalinae, laeves, mediano uniseptatae, rectae vel curvatae, 20-28 \times 2-3.5 μm .

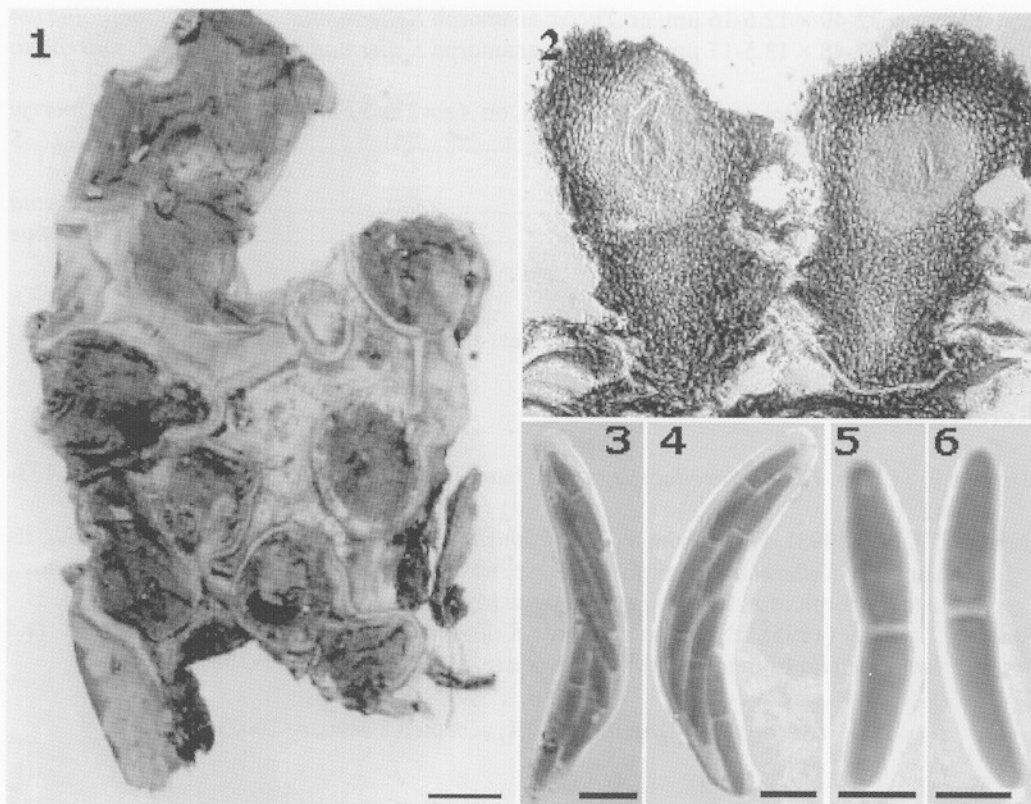
Anamorph: not observed.

Lesions on stems depressed, more or less circular to subcircular or irregular, amphigenous, densely scattered, coalescing to form larger lesions, up to 5 cm diam. *Ascstromata* solitary to aggregated, immersed, becoming erumpent, black, subglobose with a depressed, schizogenously formed central, periphysate ostiole, 200-250 μm wide, 140-300 μm high, with a basal hypostroma, 95-115 μm wide and 95-125 μm high. *Peridium* up to 30 μm thick is composed of 6-8 layers of dark brown, thick-walled, stromatic pseudoparenchymatic cells, up to 9.5 μm wide, forming a *textura angularis*. The stromatic layer around the ostiole is up to 13 layers deep. *Interthecial hamathelial* tissues disintegrate when asci develop. *Asci* obclavate to saccate, sessile to short-stalked, straight to curved, fasciculate, fissitunicate, bitunicate, 8-spored, 50-65(-75) \times 9.5-13 μm . *Ascospores* fusiform, hyaline, smooth, 1-septate in the middle, straight to curved, 20-28 \times 2-3.5 μm . *Hyphae* at the base of the stromata penetrate and invade the host tissues destroying them completely.

Holotype designated here: AUSTRALIA, Queensland, Isla Gorge National Park via Taroom, on stems of *Opuntia* sp., August 1973, J.H. Simmonds [BRIP 3388].

Host: *Opuntia* sp.

Known distribution: Australia.



Figs. 1-6. *Planistromella opuntiae* (from holotype). 1. Ascostromata on lesions on stems of *Opuntia* sp. 2. Vertical section of ascostromata. 3-4. Asci. 5-6. Ascospores. Bars: 1 = 1 cm; 2 = 100 μ m; 3-4 = 10 μ m; 5-6 = 5 μ m.

Notes: *Planistromella* species with 1-septate ascospores include *P. acervata* (Ellis and Everh.) M.E. Barr (1996), *P. parryi* (Farl. in Cooke) M.E. Barr (1996), *P. torsifoliorum* A.W. Ramaley (1995) and *P. uniseptata* A.W. Ramaley (1993). *Planistromella opuntiae* is distinguished from these species by its much narrower ascospores (see key to species given below) and by the cactaceous host. All other species occur on members of *Agavaceae*. *Planistromella yuccifoliorum* A.W. Ramaley (1993) has 2-septate ascospores and a *Kellermania* anamorph.

Key to species of *Planistromella*

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|--|-------------------------|
| 1. Ascospores 2-septate, 34-42 \times 10-16 μ m, on <i>Yucca</i> , anamorph <i>Kellermania</i> | |
| | <i>P. yuccifoliorum</i> |
| 1. Ascospores 1-septate | 2 |
| 2. Ascospores more than 31 μ m long, anamorph present..... | 3 |
| 2. Ascospores less than 31 μ m long, anamorph absent | 4 |

3. Ascospores 32-40 × 12.6-16 µm, on *Yucca*, anamorph *Kellermania*..... *P. torsifoliorum*
 3. Ascospores 32-48 × 13.5-17 µm, on *Yucca*, anamorph *Kellermania*..... *P. uniseptata*
4. Ascospores up to 7 µm wide, 23-26 × 2-7 µm, on *Agave* and *Furcraea*..... *P. parryi*
 4. Ascospores up to 4.5 µm wide 5
5. Ascospores 14-22 × 3-4.5 µm, on *Yucca*.....*P. acervata*
 5. Ascospores 20-28 × 2-3.5 µm, on *Opuntia**P. opuntiae*

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References

- Barr, M.E. (1996). *Planistromellaceae*, a new family in the Dothideales. Mycotaxon 60: 433-442.
- Ramaley, A.W. (1993). Fungi from *Yucca*: *Planistromella yuccifoliorum*, gen. et sp. nov., its anamorph, *Kellermania yuccifoliorum*, sp. nov., and *Planistromella uniseptata*, sp. nov., the teleomorph of *Kellermania yuccigena*. Mycotaxon 47: 259-274.
- Ramaley, A.W. (1995). New species of *Kellermania*, *Piptarthron*, *Planistroma*, and *Planistromella* from members of *Agavaceae*. Mycotaxon 55: 255-268.

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