

Two Species of Erysiphaceae from Pretoria

by

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During the early winter of 1965 the junior author collected two interesting species of Erysiphaceae on trees growing in the gardens of the Botanical Research Institute, Pretoria. One of these, collected on *Ehretia rigida* (Thunb.) Druce, appeared to be a new species of *Uncinula* and is described here as *Uncinula praeterita* Marasas & Schumann sp. nov. The other, *Phyllactinia acaciae* Sydow, had been collected only once before and was then described from immature material. A more complete description of this species is presented.

Uncinula praeterita Marasas & Schumann, sp. nov.

Figs. 1, 3, 5.

Colonies amphigenous; mycelium superficial, white, persistent, inconspicuous, thinly effused; hyphae hyaline, branched, sparingly septate, $3.0\text{--}6.5\mu$ wide; apressoria lobate, single or opposite, $6.5\text{--}13.0\mu \times 3.0\text{--}6.5\mu$. Perithecia scattered, globose-depressed, at first yellowish, becoming brown, $95\text{--}140\mu$ in diameter; wall composed of irregularly angular cells; appendages on the upper half of the perithecium, very numerous, 25-80 or more, usually more than 40, hyaline, straight or curved with uncinata to helicoid or occasionally obtuse tips, simple, continuous but often one- or two-septate in the lower half, thin-walled throughout, smooth, $5.0\text{--}6.5\mu$ in diameter, uniform in width or tapering slightly towards the apex, $65\text{--}290\mu$ long, usually about equal in length to the diameter of the perithecium, occasionally up to twice as long. Asci 4-7 per perithecium, broadly ovate, pedicellate, 3-spored, $50\text{--}60 \times 30\text{--}35\mu$. Ascospores hyaline, continuous, ellipsoid, $20\text{--}30 \times 13\text{--}16\mu$ (mostly $25 \times 15\mu$). Conidiophores one- or two-celled, straight, hyaline, $25\text{--}50 \times 8\text{--}10\mu$. Conidia hyaline solitary, oblong, continuous, broadly rounded at the apex and usually truncate at the base, $33\text{--}45 \times 12\text{--}15\mu$.

On leaves of *Ehretia rigida* (Thunb.) Druce (Boraginaceae), Gardens of the Botanical Research Institute, Pretoria, June 1965, Schumann in PRE 43035 (PRE, holotype).

Type collection deposited in the Mycological Herbarium, Plant Protection Research Institute, Pretoria and in the Herbarium of the Commonwealth Mycological Institute, Kew, England.

Plagulae amphigenae; mycelium superficarium, albidum, sparse effusum, non conspicuum, persistens; hyphae hyalinae, ramosae, paulo septatae, $3.0\text{--}6.5\mu$ diam.; appressoria lobata, singularia vel opposita, $6.5\text{--}13.0 \times 3.0\text{--}6.5\mu$. Perithecia sparsa, globoso-depressa, prima flavida, deinde brunnea, $95\text{--}140\mu$ diam.; cellulae parietis exterioris irregulariter angulatae; appendices numerosae, in quoque perithecio 25-80, hyalinae, rectae vel curvulae, simplices, aseptatae sed saepe uni- vel bi-septatae, tenue tunicatae, leves, in latitudine aequales vel ad apicem sensim attenuatae, $5.0\text{--}6.5\mu$ diam., perithecii diametrum subaequantur sed nonnunquam usque ad duplo longiores,

65–290 μ longae. Asci in quoque perithecio 4–7, late ovati, pedicellati, 3-sporei, 50–60 $\times$ 30–35 μ . Ascosporeae hyalinae, ellipsoideae, 20–30 $\times$ 13–16 μ . Conidiophorae uni- vel bi-cellulatae, hyalinae, rectae, 25–50 $\times$ 8–10 μ . Conidia sola, oblonga, continua, hyalina, antice rotundata postice ad basim truncata, 33–45 $\times$ 12–15 μ .

Hab. in foliis vivis *Ehretiae rigidae* (Thunb.) Druce, Pretoria, Schumann in PRE 43035 (PRE, holotypus).

U. praeterita appears to be related to *U. incrassata* Salmon (Ann. Mycol. 6: 524, 1908) (= *U. pterocarpi* Doidge, Bothalia 4: 844, 1948) and *U. combreticola* Doidge (Bothalia 4: 844, 1948), both of which occur in South Africa. *U. praeterita*, *U. incrassata* and *U. combreticola* all have about the same number of appendages (40–80), but can easily be distinguished by other characteristics of the appendages viz.:—

U. incrassata: Appendages thick-walled, aseptate, length seldom exceeding the diameter of the perithecium.

U. combreticola: Appendages thin-walled, aseptate, widening towards the tip, length usually equal to the diameter of the perithecium.

U. praeterita: Appendages thin-walled, aseptate or one- to two-septate, of uniform width or tapering slightly towards the tip, length usually equal to the diameter of the perithecium but occasionally up to two times greater.

Furthermore, both *U. incrassata* and *U. combreticola* have a well developed, dense mycelial mat covering the greater part of the leaf while *U. praeterita* forms inconspicuous colonies of thinly-effused mycelium. All the asci seen of *U. praeterita* were three-spored, while the asci of *U. incrassata* (= *U. pterocarpi*, PRE 1805) contain four spores. The ascospores of *U. incrassata* are also smaller than those of *U. praeterita*, measuring 13–18 $\times$ 12–13 μ (Doidge, Bothalia 4: 845, 1948). No mature asci were present in the type material of *U. combreticola* so that the number of ascospores per ascus and the size of the ascospores could not be determined.

The only other species of *Uncinula* known to occur on the Boraginaceae is *U. ehretiae* Keissler (Osterr. Botan. Zeitschr. 1924 p. 123), which was described on *Ehretia* sp. from China. The perithecia of this species, however, have only 4–8 appendages of which the length is less than the diameter of the perithecium (Tai, Bull. Torrey Botan. Club 73: 125, 1946).

Phyllactinia acaciae Sydow, in Ann Mycol. 33: 233 (1935); Doidge, Bothalia 4: 840 (1948.)

Fig. 2, 4, 6.

Colonies amphigenous, mycelium persistent, very well developed and covering the entire leaf surface with a thick, white mat; hyphae hyaline, branched, septate, 1–4 μ in diameter. Perithecia scattered, fairly numerous, at first orange, becoming brown, 120–275 μ in diameter, wall composed of irregularly angular cells. Appendages 7–18 per perithecium, equatorial, hyaline, rigid, continuous, 88–185 μ long, with a bulbous base, 20–35 μ in diameter, above which the appendages are 6.5–10.0 μ in diameter and the walls 3 μ thick, tapering to the apices. Asci 12–26 per perithecium, ovate, pedicellate, two-spored, 50–68 $\times$ 25–30 μ . Ascospores hyaline, continuous, ellipsoid, vacuolate, 23–30 $\times$ 13–16 μ (mostly 25 $\times$ 15 μ). Conidiophores three-celled, straight or curved, hyaline, 50–62 $\times$ 3–5 μ . Conidia solitary, oblong-clavate or cylindrical, obtusely rounded at both ends with the lateral walls concave, 40–80 μ long (mostly 62 μ), 10–15 μ broad at the ends and 8.0–12.5 μ in the centre.

On leaves of *Acacia karroo* Hayne (Mimosaceae), Gardens of the Botanical Research Institute, Pretoria, June 1965, PRE 43036.

Only the type material of *P. acaciae* had been collected previously (PRE 23428, Klapperkop, near Pretoria, 1928). Sydow (loc. cit.) and Doidge (loc. cit.) observed that very few, apparently not quite mature perithecia, were present in the type collection. The present authors could not find any perithecia on the type material in the Mycological Herbarium, Plant Protection Research Institute, Pretoria.

Abundant material of a *Phyllactinia* with a well developed conidial as well as perithecial stage was collected on *Acacia karroo* in the gardens of the Botanical Research Institute, Pretoria during June, 1965. This fungus was considered identical with *P. acaciae* because of the typical "dumb-bell-shaped" conidia and the size and shape of the asci and ascospores.

Acacia karroo is a new host record for *P. acaciae* which was described on *A. robusta* by Sydow (loc. cit.). A more complete and somewhat emended description of *P. acaciae*, made from more mature material, is given above.

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EXPLANATION OF FIGURES

FIG. 1-4.—Fig. 1. *Uncinula praeterita*, ascocarp, $\times 125$.

Fig. 2. *Phyllactinia acaciae*, ascocarp, $\times 125$.

Fig. 3. *Uncinula praeterita*, appendages, $\times 500$.

Fig. 4. *Phyllactinia acaciae*, appendages, $\times 500$.

FIG. 5-6.—Fig. 5. *Uncinula praeterita*, (a) appendages; (b) conidiophores; (c) conidia; (d) asci; (e) ascospores; (f) appressoria.

Fig. 6. *Phyllactinia acaciae*, (a) appendages; (b) conidiophores; (c) conidia; (d) asci; (e) ascospores.



