

Pseudocercospora wattakakae sp. nov. – a new cercosporoid hyphomycete from India

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Abstract: Bagyanarayana, G., Braun, U. & Moinuddin, K. 2014: *Pseudocercospora wattakakae* sp. nov. – a new cercosporoid hyphomycete from India. *Schlechtendalia* 27: 37–40.

The new species *Pseudocercospora wattakakae*, causing a leaf-spot disease on *Dregea volubilis* (Apocynaceae) in India, Andhra Pradesh, is described, illustrated and compared with other cercosporoid species on allied hosts. The new species resembles *Pseudocercospora marsdeniigena* but differs in forming superficial hyphae with solitary conidiophores. Furthermore, the stromata are much smaller, conidiophores are 0–1(–2)-septate and narrower, the pigmentation of the conidia is darker and the conidial base is short to long obconically truncate and only 1–1.5(–2) µm wide. Species of *Pseudocercospora* on hosts belonging to *Marsdenia* s. lat. are keyed out.

Zusammenfassung: Bagyanarayana, G., Braun, U. & Moinuddin, K. 2014: *Pseudocercospora wattakakae* sp. nov. – ein neuer cercosporoider Hyphomyzete aus Indien. *Schlechtendalia* 27: 37–40.

Die neue Art *Pseudocercospora wattakakae*, die eine Blattfleckenkrankheit an *Dregea volubilis* (Apocynaceae) in Indien, Andhra Pradesh, hervorruft, wird beschrieben, abgebildet und mit anderen cercosporiden Arten auf verwandten Wirten verglichen. Die neue Art ähnelt *Pseudocercospora marsdeniigena*, von der sie sich aber durch die Bildung von Oberflächenhyphen mit einzelnen Konidienträgern unterscheidet. Weiterhin sind die Stromata viel kleiner, die Konidienträger haben 0–1(–2) Septen und sind schmaler, die Konidien sind viel dunkler pigmentiert und an der Basis kurz bis lang konisch gestutzte und nur 1–1.5(–2) µm breit. *Pseudocercospora*-Arten auf Wirten der Gattung *Marsdenia* s. lat. werden aufgeschlüsselt.

Key words: Mitosporic fungus, cercospora-like, new species, *Dregea volubilis*, Asia.

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Introduction

Cercosporoid fungi comprise numerous genera, mainly causing leaf-spot diseases, belonging to the *Mycosphaerellaceae* and represents one of the largest groups of hyphomycetes worldwide (Crous & Braun 2003, Crous et al. 2013, Groenewald et al. 2013). The examination of leaf spots recently collected in Andhra Pradesh, India, on *Dregea volubilis* (Apocynaceae) showed that the causal agent belongs to an undescribed species of the genus *Pseudocercospora* Speg. well distinguished from other species described on this and allied host species.

Material and Methods

Standard light microscopy (Olympus BX50) has been used to examine the material (unstained samples mounted in distilled water, oil immersion, 1000×). The given sizes of conidiophores, conidia and other structures are based on 30 measurements with the extremes given in brackets.

Result

Pseudocercospora wattakakae Bagyan., U. Braun & Moinuddin, sp. nov.

Fig. 1

MycoBank, MB 809172.

Etym.: Epithet derived from the genus name *Wattakaka* (≡ *Dregea* sect. *Wattakaka*).

Diagnosis: Morphologically close to *Pseudocercospora marsdeniigena* but distinguished by forming superficial hyphae with solitary conidiophores. Furthermore, stromata smaller, 10–60 µm diam., conidiophores 0–1(–2)-septate, 2–5 µm wide, and conidia medium to dark olivaceous-brown with distinctly short to long obconically truncate base, only 1–1.5(–2) µm wide.

Leaf spots amphigenous, at first visible as rather indistinct discolorations, greenish to dingy greyish green, later forming distinct spots, subcircular to angular-irregular, 1–10 mm diam. or confluent and larger, brown to greyish white, margin narrow to moderately broad, darker brown. Caespituli amphigenous, mainly hypophyllous, scattered to aggregated, punctiform, dark brown to almost blackish. Mycelium internal and external; superficial hyphae branched, occasionally

anastomosing, septate, straight to sinuous or irregular by constrictions at the septa, 1–4 μm wide, pale to medium olivaceous or olivaceous-brown, thin-walled, smooth. Stromata well-developed, substomatal to immersed, intraepidermal, 10–60 μm diam., dark olivaceous-brown, composed of swollen hyphal cells, 2–5 μm diam., circular to angular in outline. Conidiophores in small to moderately large fascicles, arising from stromata, often forming sporodochial structures, emerging through stomata or erumpent, occasionally single or few loosely grouped conidiophores emerging through stomata, and conidiophores solitary, arising from superficial hyphae, lateral, erect, straight to curved or somewhat geniculate-sinuous, unbranched, uniformly short, 5–25(–30) $\times$ 2–5 μm , 0–1(–2)-septate, subhyaline to medium olivaceous-brown, thin-walled, smooth; conidiogenous cells integrated, terminal or conidiophores often reduced to conidiogenous cells, 5–20 μm long, conidiogenous loci inconspicuous or visible as truncate tip, but always unthickened and not darkened. Conidia solitary, obclavate-cylindrical or subcylindrical, straight to curved, (20–)25–90(–110) $\times$ 4–7 μm , (1–)3–9(–10)-septate, usually medium to dark olivaceous-brown, occasionally pale olivaceous-brown, thin-walled, smooth, apex obtuse to somewhat pointed, base distinctly short to long obconically truncate, 1–1.5(–2) μm wide, hilum unthickened, not darkened.

Holotype: India, Andhra Pradesh, Warangal District, Etur nagaram wild life sanctuary, on living leaves of *Dregea volubilis* (L. f.) Benth. ex Hook. f. (= *Marsdenia volubilis* (L. f.) Cooke, *Wattakaka volubilis* (L. f.) Stapf), *Apocynaceae*, 29 Dec. 2013, K. Moinuddin (HAL 2667 F).

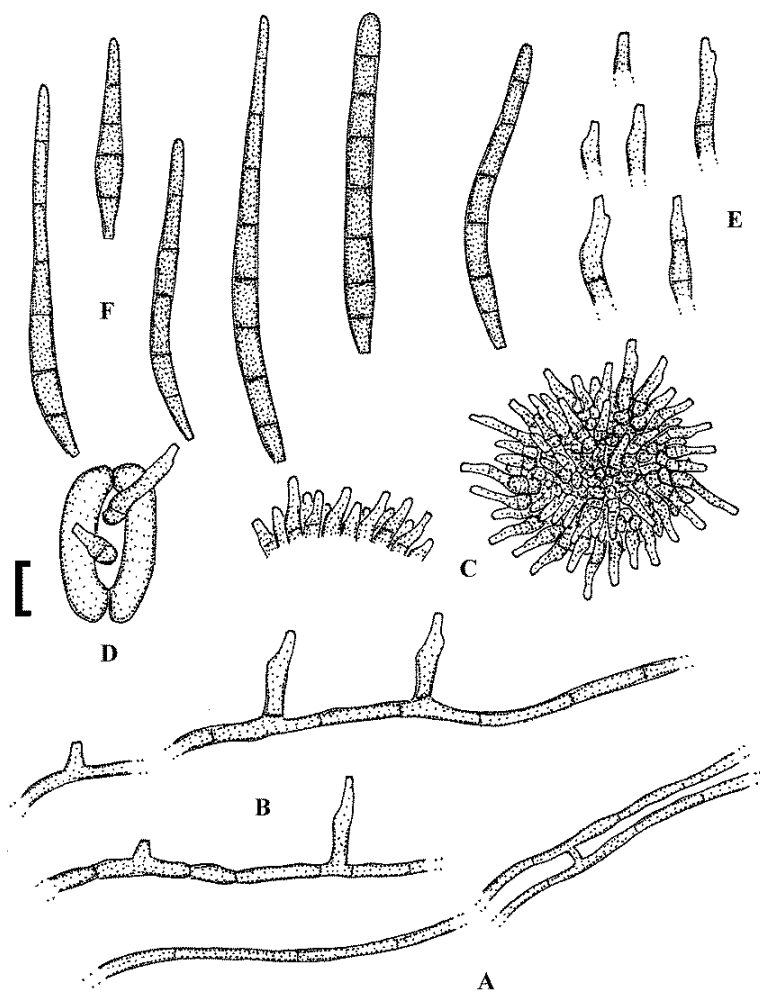


Fig. 1: *Pseudocercospora wattakakae*, A – Superficial hyphae, B – Solitary conidiophores arising from superficial hyphae, C – Conidiophore fascicles, D – Solitary conidiophores emerging through a stoma, E – Conidiophores, F – Conidia. Bar – 10 μm . U. Braun del.

Discussion

The generic taxonomy of *Marsdenia* R. Br. (*Apocynaceae*, *Asclepioideae*, *Marsdenieae*) is intricate and disputable, ranging from *Marsdenia* sensu stricto, confined to eight Asian species around *M. tinctoria* R. Br., the type species of this genus, to *Marsdenia* sensu latissimo including several allied genera as synonyms, e.g. *Cionura* Griseb., *Gongronema* (Endl.) Decne., *Dregea* E. Mey. and *Wattakaka* Hasskn. (Livshultz et al. 2013). In the present work we follow the generic concept outlined in Wu et al. (1995) who reduced *Wattakaka* to synonym with *Dregea*. Several *Pseudocercospora* species have been described on hosts of the *Marsdenieae* and *Marsdenia* s. lat. Braun & Freire (2006) introduced the South American species *Pseudocercospora marsdeniigena* U. Braun & F.O. Freire on *Marsdenia* sp. in Brazil, which is morphologically close to the new Indian species on *Dregea volubilis*, but well distinguished by having larger stromata, 30–80 µm diam., aseptate conidiophores, 3–7 µm wide, and paler conidia with short obconically truncate base, 2–3 µm wide. Superficial mycelium with solitary conidiophores is lacking. *P. marsdeniae* (Hansf.) Deighton (≡ *Cercospora marsdeniae* Hansf.), described from Uganda on *Marsdenia angolensis* N.E. Br., is another morphologically similar species which differs from *P. wattakakae* in having internal mycelium, much longer pluriseptate conidiophores and cylindrical, paler conidia with subtruncate base (Hansford 1947, Chupp 1954). In addition to the type, this species has been recorded from Africa (Ghana), Asia (China and Pakistan) and Europe (Bulgaria) on *Cionura erecta* (L.) Griseb. (≡ *Marsdenia erecta* (L.) R. Br.), *Dregea sinensis* Hemsl. (≡ *Wattakaka sinensis* (Hemsl.) Stapf), *Marsdenia latifolia* (Benth.) K. Schum. and *M. roylei* Wight (Crous & Braun 2003). Chiddarwar (1959) recorded *C. marsdeniae* on *Dregea volubilis* from Maharashtra, India, but without any morphological data. Kamal (2010) listed *P. marsdeniae* on this host from Maharashtra and West Bengal. Material referring to these records was not available for re-examination, but belongs probably to *P. wattakakae*. Guo & Hsieh (1995) described and illustrated a Chinese collection on *Dregea sinensis* and assigned it to *P. marsdeniae* based on similar characters of conidiophores and conidia, although distinct by forming superficial hyphae with solitary conidiophores. The relation between the Chinese fungus and true *P. marsdeniae* is unclear and needs additional collections and examinations. *Pseudocercospora marsdeniicola* A.K. Kar & M. Mandal (Kar & Mandal 1970), described from India on *Dregea volubilis*, is morphologically quite distinct from *P. wattakakae* by having very long conidiophores, up to 194 µm, 0–20-septate, occasionally 1–3 times branched, and paler, narrower conidia, 16.5–100 × 3–4.5 µm.

Key to *Pseudocercospora* spp. on host species of *Marsdenia* s. lat. (including *Dregea* and *Wattakaka*)

1. Conidiophores very long, up to 194 µm, 0–20-septate, occasionally 1–3 times branched; conidia obclavate-cylindrical, 16.5–100 × 3–4.5 µm; on *Dregea volubilis*, India *P. marsdeniicola*
- 1* Conidiophores much shorter, up to 85 µm, with less than 10 septa; conidia 3–7 µm wide 2
2. Conidiophores uniformly short, 5–25(–30) µm, 0–1(–2)-septate, in well-developed fascicles arising from well-developed stromata or in addition also solitary, arising from superficial hyphae; conidia cylindrical to obclavate-cylindrical, conidial base short to long obconically truncate 3
- 2* Conidiophores much longer, up to 85 µm, 0–9-septate; conidia cylindrical or subcylindrical, much paler, base truncate or subtruncate 4
3. Mycelium internal, external hyphae with solitary conidiophores not formed; stromata large, 30–80 µm diam.; conidiophores 0(–1)-septate, 3–7 µm wide; conidia pale to medium olivaceous or olivaceous-brown, base short obconically truncate, 2–3 µm wide; on *Marsdenia* sp., Brazil *P. marsdeniigena*
- 3* Mycelium internal and external, solitary conidiophores arising from superficial hyphae formed; stromata smaller, 10–60 µm diam.; conidiophores 0–1(–2)-septate, 2–5 µm wide; conidia medium to dark olivaceous-brown, base short to long obconically truncate and only 1–1.5(–2) µm wide; on *Dregea volubilis*, India *P. wattakakae*

4. Mycelium internal; conidiophores in divergent fascicles; on *Cionura erecta* and various species of *Marsdenia*, mainly in Africa *P. marsdeniae*
- 4* Mycelium internal and external; conidiophores fasciculate and solitary, arising from superficial hyphae; on *Dregea sinensis*, China *P. marsdeniae* sensu Guo & Hsieh (1995)

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