

Microcyclospora rhoicola



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***Microcyclospora rhoicola* Tanney, sp. nov.**

Etymology. Named after the host from which it was collected, *Rhus typhina*.

Colonies on Rhus typhina forming dark, sometimes slimy, crust on petiole and twig surfaces, forming a stroma-like sheath on trichomes, *textura prismatica* in surface view. *Mycelium* consisting of pale brown, branched, thick-walled (c. 1 µm), septate hyphae, (2–)4–6.5(–7.5) µm diam, smooth. Micromorphology identical to that in culture, described below.

Colonies on malt extract agar (MEA). *Mycelium* consisting of pale brown, branched, septate hyphae, 1.5–3.5 µm diam, smooth. In older cultures, hyphae becoming darker, thick-walled (c. 1 µm), ossiform, and fragmenting to form a yeast-like colony. *Conidiophores* reduced to conidiogenous cells. *Conidiogenous cells* integrated, lateral on hyphae, solitary, subdenticulate, 3–5 µm tall, 2–3 µm wide, pale brown, smooth. *Conidia* (0–)1–3(–6)-septate, 3-septate conidia most frequent, 5–6-septate conidia rarely observed, aseptate conidia (8–)9–17.5(–29.5) × (2–)2.5–3 µm, 1-septate conidia (10.5–)11.5–22.5(–36) × (2–)2.5–3(–3.5) µm, 2-septate conidia (17–)19–28(–32) × (2.5–)3–3.5(–4) µm, 3-septate conidia (19–)26–35.5(–40) × (2–)2.5–3(–3.5) µm, 4-septate conidia (36–)37.5–44(–47.5) × (2.5–)2.5–3(–3.5) µm, 5-septate conidia (47–)48.5–56(–57) × 2.5–3 µm, 6-septate conidia 48.5 × 3 µm, hyaline, smooth, cylindrical, straight to variously curved, apex obtuse, base truncate, older conidia somewhat constricted at septa, guttulate, aggregated in mucoid masses; hila neither thickened nor darkened; anastomosis among conidia sometimes observed; microcyclic conidiation commonly observed.

Culture characteristics — (in the dark, 25 °C after 2 wk on MEA): Colonies convex, with moderate to woolly aerial mycelium; surface irregular, slimy, dark grey to olive (1F1–1F3) (Kornerup & Wanscher 1978), aerial mycelium greyish off-white to pastel grey (1B2–1B3), margin diffuse; reverse dark grey (1F1); diam up to 4 mm. In older colonies (> 6 wk), aerial

mycelium becoming yellowish brown to tobacco brown (5E8–5F6), collapsing, centre carbonaceous, slimy and yeast-like, margin lobate.

Typus. CANADA, Ontario, Ottawa, Dominion Arboretum, on twigs of *Rhus typhina* var. *laciniata* (Anacardiaceae), 20 Oct. 2011, J.B. Tanney, holotype DAOM 242272, dried culture ex-type DAOM 242276, ITS sequence GenBank KC012605, LSU sequence GenBank KC012606, TEF1 sequence GenBank KC012604, MycoBank MB801439.

Notes — *Microcyclospora* was first described in 2010, with three species causing sooty blotch on *Malus domestica* fruit (Frank et al. 2010). The genus is characterised by 1–multi-septate, smooth, pale brown, scolecosporous to cylindrical conidia borne from reduced and integrated mono- to polyblastic conidiogenous cells. Conidia occur in mucoid masses and microcyclic conidiation is common (Frank et al. 2010). Morphologically, *M. rhoicola* conforms with the generic concept of *Microcyclospora* and can be differentiated from other species by its shorter conidia with fewer septa (Table 1). The discovery of *M. rhoicola* represents the first record of *Microcyclospora* in North America and on its host, *Rhus typhina*.

The phylogenetic analysis below is based on internal transcribed spacer (ITS) sequences derived from two *M. rhoicola* isolates (specimens collected c. 250 km apart) and previously published data (Frank et al. 2010, Crous et al. In press). *Microcyclospora rhoicola* has distinct ITS sequences from those sequenced to date and appears to be rather distant from the currently described species.

Several cercosporoid fungi are described from *Rhus* spp. in North America (Farr et al. 1989), including *Cercospora toxicodendri* and *Pseudocercospora rhoinea*. Both species occur as leaf spots and have more complex conidiophores compared to the reduced and integrated conidiogenous cells characterising *M. rhoicola*.

Fig. 1 Consensus phylogram (50 % majority rule) of 15 002 trees resulting from a Bayesian inference analysis of an ITS sequence alignment using MrBayes v. 3.1.2. Posterior probabilities indicated with colour-coded branches (see legend).

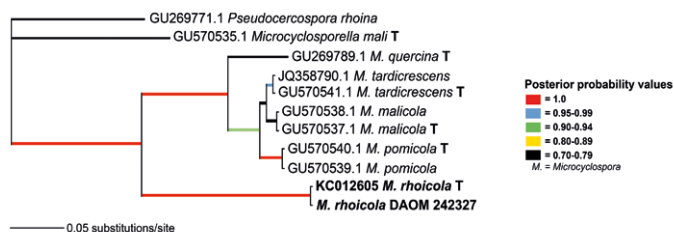


Table 1 Comparison of hosts, distribution and micromorphology of currently described *Microcyclospora* species.

Species	Host	Origin	Morphology		Reference
			Conidial dimensions (µm)	Conidial septation	
<i>M. malicola</i>	<i>Malus</i>	Germany, Slovenia	45–75 × 2.5	(1–)5–7(–13)	Frank et al. (2010)
<i>M. pomicola</i>	<i>Malus</i>	Germany	50–75 × 2.5–3	1–13	Frank et al. (2010)
<i>M. quercina</i>	<i>Quercus</i>	Netherlands	30–45 × 2.5–3	(1–)3–4(–11)	Crous et al. (In press)
<i>M. rhoicola</i>	<i>Rhus</i>	Canada	26–36 × 2.5–3	(0–)1–3(–6)	Present study
<i>M. rumicis</i>	<i>Rumex</i>	Iran	37–54 × 2.5	1–10	Arzanlou & Bakhshi (2011)
<i>M. tardicrescens</i>	<i>Malus</i>	Slovenia	35–55 × 2	1–9	Frank et al. (2010)

Colour illustrations. *Rhus typhina* var. *laciniata* at the Dominion Arboretum, Ottawa, Ontario, Canada (type host, photo K. Seifert); mycelium on individual trichomes (scale bar = 100 µm); conidiogenous cells and conidia exhibiting microcyclic conidiation. Scale bars = 10 µm.