

First record of *Leveillula helichrysi* from Germany, including the first description of its anamorph

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Abstract. The powdery mildew fungus *Leveillula helichrysi*, so far only known from the Ukraine, is recorded, described, and illustrated from Germany, including the anamorph, which has been found for the first time. Based on the anamorph, the correct assignment of this species to *Leveillula* could be confirmed. *L. helichrysi* belongs in *Leveillula* subgen. *Obtusispora*.

Key words: conidial state, distribution, Erysiphales, *Leveillula*, taxonomy

Heluta & Simonyan (1988) and Heluta (1989) described *Leveillula helichrysi* on *Helichrysum arenarium* from the Ukraine, based on several collections with ascomata (chasmothecia), but devoid of any conidiophores and conidia. In 2004, fruit bodies as well as conidiophores and conidia of this species were found in Saxony, Germany, representing the first German record of this fungus and the first record of its anamorph at all. This species can be described as follows:

Leveillula helichrysi V.P. Gelyuta & Simonyan, Biol. Zhurn. Armenii 41(10): 819 (1988). (Figs 1-2)

Mycelium not very evident, immersed in the dense tomentum of the host leaves. Conidiophores emerging through stomata, erect, filiform, flexuous, long, up to 250 × 6-10 µm, pluriseptate, hyaline, thin-walled, smooth or almost so. Conidia formed singly, primary conidia broadly ellipsoid-obovoid, 40-50 × 16-22 µm, length/width ratio 2.2-2.7, apex broadly rounded, base subtruncate, colourless, secondary conidia subcylindrical, rarely subclavate-doliiform, (35-) 40-55 (-60) × 14-20 µm, length/width ratio 2.2-3.7, ends rounded to subtruncate, colourless. Chasmothecia immersed in the dense tomentum of the host leaves, 130-190 µm diam, outer peridial cells 5-25 µm diam, angular-irregular to sinuous in outline, dark brown, appendages numerous, arising from the lower half of the chasmothecium, shorter than the

diameter of the fruit body, 4-10 µm wide, mycelioid, simple or branched, hyaline to pigmented, thin-walled, continuous to septate, asci 5-15, saccate, short stalked, 60-100 × 35-50 µm, two-spored, ascospores broadly ellipsoid-ovoid, 25-40 × 14-25 µm, ends broadly rounded, colourless.

Material examined: on *Helichrysum arenarium* L. (Asteraceae), Germany, Saxony, Lohsa, post-mining lake Dreiweibern, 51°23'42"N, 14°24'20"E, alt. ca 115 m, 19 Aug 2004, leg. S. Hoeflich, det. H. Boyle, conf. U. Braun (GLM 61 837).

Ascomata of *Leveillula* Arnaud species, characterised by having mycelium-like appendages and two-spored asci, resemble those of *Golovinomyces* (U. Braun) V.P. Gelyuta. The features of the fruit bodies are often of limited taxonomic and little diagnostic value. However, the anamorphs of *Leveillula* species are usually more distinctive and taxonomically relevant. Most collections of *L. helichrysi* examined by Heluta (1989) had previously been referred to as *Erysiphe cichoracearum* DC. [= *Golovinomyces cichoracearum* (DC.) V.P. Gelyuta]. Based on the anamorph found in Germany, the correct assignment of the *Helichrysum* powdery mildew to the genus *Leveillula* could be confirmed. Due to the shape of the primary conidia, *L. helichrysi* has to be placed in *Leveillula* subgen. *Obtusispora* V.P. Gelyuta & Simonyan as supposed by Heluta (1989). The SEM picture shows a

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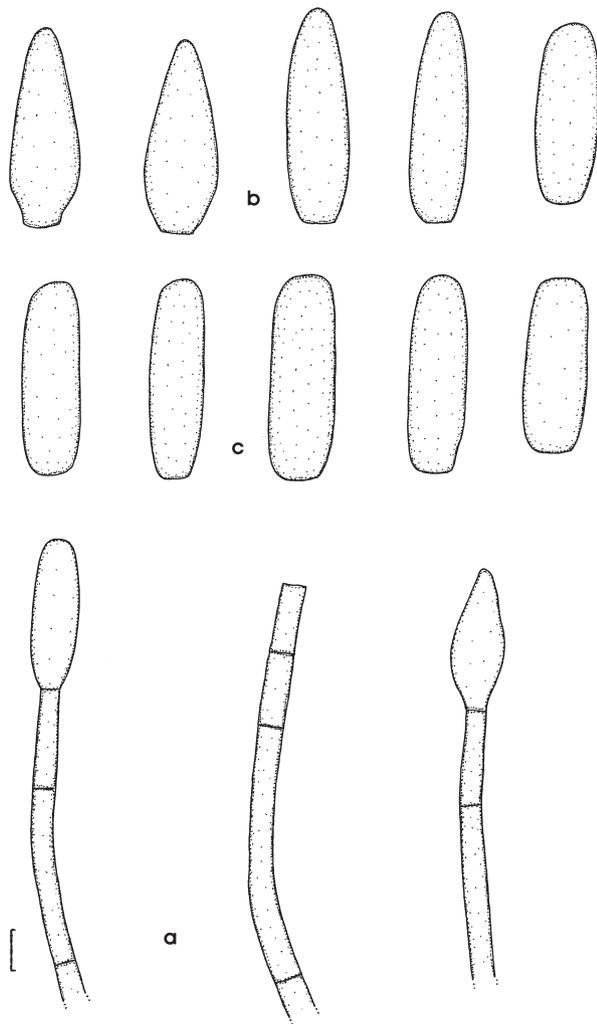


Fig. 1. *Leveillula helichrysi*: a – conidiophores, b – primary conidia, c – secondary conidia. Bar = 10 µm

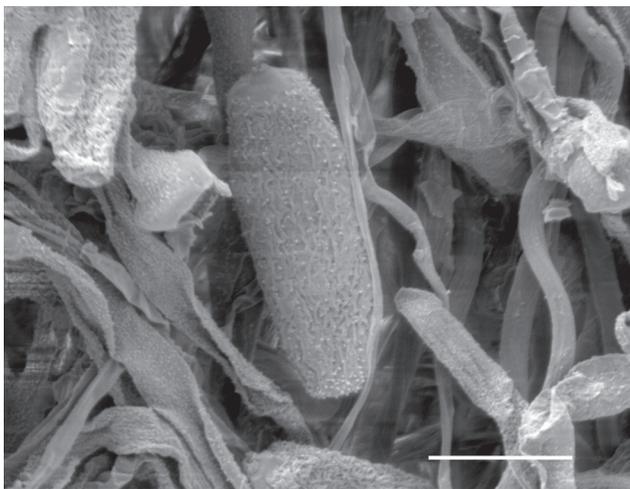


Fig. 2. *Leveillula helichrysi* (SEM micrograph of a wrinkled secondary conidium). Bar = 20 µm

wrinkled conidium with a surface pattern characteristic for *Leveillula* (see Heluta 1989: 243-247, Pl. XI-XV). Reports of *Leveillula taurica* (Lév.) Arnaud on *Helichrysum arenarium* from France and Poland (Sałata 1985; Amano 1986) belong probably to *L. helichrysi*.

Braun (1995) introduced the provisional name *Erysiphe helichrysi* U. Braun for a species of *Oidium* subgen. *Reticuloidium* R.T.A. Cook *et al.* (anamorph of *Golovinomyces*, Braun *et al.* 2002), based on the assumption that large ascomata referred to as *Erysiphe cichoracearum* f. *helichrysi* Jacz. (Jaczewski 1927) represent the teleomorph of this *Oidium*. This treatment was probably wrong. It has to be supposed that some or perhaps even most records of *Erysiphe cichoracearum*, incl. f. *helichrysi*, on *Helichrysum arenarium* refer to *Leveillula taurica*, e.g., from France, Germany, Italy, Kazakhstan, Poland, Romania, Sweden, and Russia (Amano 1986).

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