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# *Candelariella viae-lacteae*, a New Lichen Species from Europe

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With 1 figure

Summary

*Candelariella viae-lacteae* **sp. n.** is described and reported from Greece and Hungary. It is mainly characterized by its grey, granular to coralloid, delicate thallus and its occurrence on bark.

Zusammenfassung

Es wird die **neue** Flechten-Art *Candelariella viae-lacteae* beschrieben. Die bislang aus Griechenland und Ungarn nachgewiesene Art ist hauptsächlich durch ein graues, körniges bis koralloides Lager und das Vorkommen auf Rinde gekennzeichnet.

## 1. Introduction

Until now two *Candelariella* species with a clearly developed grey thallus were known from Europe: *Candelariella plumbea* and *C. oleaginescens*. The first was found on warm calcareous rocks in Austria and Roumania, the latter on calcareous rocks and walls in southern France (Poelt & Vězda, 1976, 1977). In recent years an apparently undescribed corticolous *Candelariella* with grey thallus has been collected in Greece and Hungary.

## 2. Material and methods

Three specimens were examined. Light microscopy measurements used for statistical calculations were made with an oil immersion lens on material mounted in water, achieving a precision of 1 µm. In the text, spore measurements are given as (min. −) X ± SD (− max.) where X ± SD are rounded to the nearest whole number. The minimum value (min.) and the maximum value (max.) are the extreme values recorded. The mean value ($X$), the standard deviation ($SD$), and the total sample size ($n$) are given in parentheses. The iodine reaction was studied both with and without pretreatment with K; the former reaction is denoted the K/I reaction, the latter the I reaction. Thin layer chromatography (TLC) was carried out in accordance with the method described by Culberson & Kristinsson (1970) and Culberson (1972).

## 3. Description of *Candelariella viae-lacteae* sp. n.

Typus: Hungary, Bács-Kiskun Prov., Kecskemét area, Fülöphaza (20 km W of Kecskemét), alt. c. 150 m, 1987, G. Thor 7015 (S holotypus, STU, VBI isotypus).

*Thallus granulosus, griseus, granula adnata vel erecta ubi parva, postea erecta et simplicia vel coralloidea, circa 0.07–0.20 mm crassa; medulla cretacea albido-grisea, calcium oxalatum non continens; hyphae 2–4 µm crassae; thallus sorediis et isidiis destitutus. Algae unicellulares, circa 8–16 µm crassae, ad Chlorococcaceas pertinentes.*

*Apothecia multa, rotundata, basi leviter constricta, lecanorina, circa 0.3–0.8 mm diametro, discus flavidus, planus vel leviter concavus ubi parvus, postea planus vel convexus; margo interdum leviter crenulatus, flavidus vel extrinsecus griseus. Hypothecium hyalinum; hymenium 50–70 µm altum; paraphyses apice granulis luteis tectae. Sporae octonae, ellipsoideae, rectae, interdum leviter curvatae, simplices, raro 1-septatae, incoloratae, (13–) 14–17 (–18) x (4–) 5–6 (–6) µm.*

*Thallus K-, C-, PD-, UV-.*

Thallus epiphloeodic, granular, smooth, grey; granules when small appressed or erect, later erect and unbranched to coralloid, c. 0.07–0.20 mm in diameter; prothallus not seen; medulla cretaceous, whitish grey, lacking calcium oxalate; hyphae 2–4 µm in diameter. Neither isidia nor soralia seen. Photobiont belonging to Chlorococcaceae, unicellular, c. 8–16 µm in diameter.

Apothecia numerous, solitary, round, with a slightly constricted base, smooth to yellowish pruinose, lecanorine, 0.3–0.8 mm in diameter; thallus margin sometimes slightly crenulate, yellow or grey in the outer part and yellow in the inner part; disc yellow, when small flat to slightly concave, later flat to convex; hypothecium hyaline; hymenium c. 50–70 µm high; epithecium with dark yellow granules, c. 5–10 µm high; paraphyses septate, unbranched, hyaline, 2–3 µm in diameter; paraphysoid tips smooth, hyaline, 3–4 µm thick; asci 8-spored, c. 40–55 x 12–16 µm; spores ellipsoid, straight to slightly curved, nonseptate or rarely 1-septate, hyaline, (13–) 14–17 (–18) x (4–) 5–6 (–6) µm (length: X = 15.4 µm, SD = 1.1 µm, n = 120; width: X = 5.5 µm, SD = 0.5 µm, n = 120). Pycnidia not seen.

Chemistry: calycin, pulvinic acid and pulvinic dilactone in the apothecia, no detectable substances by TLC in the thallus; C-, K-, PD-, UV-; hymenium K-, I+ dark blue, K/I+ dark blue (paler in the epithecium); ascal apex dark blue in I and K/I (darker in K/I) except the uppermost 2–3 µm which are pale blue (sometimes is an ocular chamber visible).

Distribution and habitat. *Candelariella viae-lacteae* is only known from two collections in Greece and one in Hungary. In spite of this, we describe the species, since it is very characteristic. It is probably rare.

In Hungary the species was found in an area with sand dunes with scattered trees of *Populus* spp. It was only seen on one large tree with rough bark. It was accompanied by e. g. *Biatorella ochrophora*, *Buellia punctata*, *Candelariella xanthostigma*, *Lecanora chlarotera*, *L. hagenii*, *Phaeophyscia orbicularis*, *Physcia adscendens*, *P. stellaris*, *Physconia perisidiosa* and *Xanthoria parietina*. A total list of species recorded from the locality is presented in Thor (1988). One of the samples from Greece (17669, Fig. 1) is probably collected on *Pinus* sp. and one (17668) on a deciduous tree. Both were found on road trees in the city of Athen. On the sample from

Fig. 1. *Candelariella viae-lacteae* (STU-Wirth 17669, Greece: Athen). – Scale: 1 mm.

*Pinus* sp. there are no other lichens; the specimen on the deciduous tree is accompanied by *Buellia alboatra*, *Lecanora hagenii*, *Physcia biziana*, *Physconia grisea* s. lat. and *Xanthoria parietina*.

Notes. The species was named because of the numerous yellow apothecia which very clearly contrast with the grey thallus (*via-lactea* is latin for the Milky Way). *Candelariella viae-lacteae* is easily recognized by the grey, unbranched to coralloid, delicate thallus and the habitat. There is no other *Candelariella* species with an unbranched to coralloid, delicate thallus in Europe. It is also the only corticolous *Candelariella* species in Europe with a grey thallus. The two other European *Candelariella* species with grey thalli (*C. oleaginescens*, *C. plumbea*) occur on calcareous rock or walls. *Candelariella viae-lacteae* is most similar to *C. plumbea* but the granular to coralloid structures of *C. viae-lacteae* measure 0.07 to 0.20 mm in diameter while the thallus of *C. plumbea* consists of up to 1.3 mm broad convex to uneven squamules which sometimes break up to coarse granules (0.10–0.25 mm). Also, the thallus margin of the apothecia is more crenulate in *C. plumbea* than in *C. viae-lacteae*. The status of *Candelariella oleaginescens* is unclear (Poelt & Vězda, 1977) but is distinguished from *C. plumbea* by e. g. the thinner areolate to squamulate thallus, the smaller apothecia and the longer spores.

*Candelariella viae-lacteae* contains the substances usually present in species of the genus (pulvinic dilactone, pulvinic acid, calycin), but only in the apothecia. The greyish thalllus has no substances detectable by TLC.

Three European *Candelariella* species include taxa with citrine-green coloured thalli (also the apothecia are more or less citrine-green): *Candelariella aurella*,

*C. medians* and *C. vitellina* (GILBERT & alii, 1981). These citrine-green chemotypes all arise through a suppression of calycin, which is lacking or present only in traces. They contain pulvinic dilactone and pulvinic acid in approximately equal amounts as yellow coloured thalli. They usually form intimate mosaics with their ‚parent' species, the scattered colonies of the citrine-green forms covering less than 1% of the surface (GILBERT & alii, 1981; WIRTH, 1975 p. 121). The thalli of *Candelariella viae-lacteae* do not form such mosaics; the whole thallus is grey. In the species with grey thalli the suppression of all three components may have occurred.

Specimens examined: Greece: Athen, 1976, W. EITSCHBERGER (STU-Wirth n. 17668 & 17669) (STU-Wirth). Hungary: Bács-Kiskun Prov., Kecskemét area, Fülöpháza (20 km W of Kecskemét), alt. c. 150 m, 1987, G. THOR 7015 (S, STU, VBI).

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