

New or Noteworthy Species of Lichens from Shiga Prefecture, Central Japan

Hiroyuki KASHIWADANI^a, Keisuke KOBAYASHI^b and Kwang Hee MOON^c

^aDepartment of Botany, the National Museum of Nature and Science,
4-1-1, Amakubo, Tsukuba, 305-0005 JAPAN;
E-mail: hiro9972@jcom.home.ne.jp

^bPhytosociological Research Office, 243-16, Hirata-cho, Hikone, 522-0041 JAPAN;

^cDivision of Non-Vascular Plants, National Institute of Biological Resources,
Gyoungser-dong, Seo-gu, Incheon, KOREA

(Received on May 30, 2009)

Lepraria ohmiensis Kashiw., Keis. Kobay. & K. H. Moon is described from Prov. Ohmi (Shiga Pref.), central Japan. It is easily distinguished from allied species of *Lepraria* in having a thick thallus and in producing lecanoric acid and pannaric acid esters as major chemical substances. *Protoblastenia rupestris* (Scop.) Steiner is newly reported for Japan. A new locality of *Dictyocatenulata alba* Finley & E. F. Morris in Japan is reported.

Key words: *Dictyocatenulata alba*, Japan, *Lepraria ohmiensis*, lichen, *Protoblastenia rupestris*.

In 2008 and 2009, we had opportunities to make field studies of lichens in Shiga Prefecture in central Japan and collected ca. 300 specimens. Through detailed studies of them along with about 200 specimens collected in Shiga Prefecture and preserved in TNS, we have found a number of interesting lichens. Among them, *Dictyocatenulata alba*, a rare species in Japan, and *Protoblastenia rupestris*, which is new to Japan, are recorded in the present paper. In addition, *Lepraria ohmiensis* is described as a new species.

Dictyocatenulata alba Finley & E. F. Morris in Amer. Midl. Nat. 77: 201 (1967).

[Figs. 1A, 1B]

The characteristic features for this species are 1) crustose, grayish green, smooth thallus without isidia or soredia, 2) *Trentepohlia* as a photobiont, 3) single or branched, whitish to cream-colored synnemata to 1.5 mm high, 4)

subspherical to ellipsoid 10–20 celled colorless conidia, which are 8–15 × 8–10 μm and 5) absence of chemical substance.

This species had been recognized as a non-lichenized fungus by mycologists (Seifert et al. 1987). Recently, however, it was confirmed as a lichenized fungus (hyphomycetes) though the taxonomic position is still unclear (Aptroot and Schiefelbein 2003, Diederich et al. 2008). Although this species has been widely distributed in tropical and temperate regions in the world (Seifert et al. 1987) usually at elevations above ca. 500 m, it has been known only at two localities in Japan, Wakayama and Okinawa Prefectures.

In the present work, we found a well developed colony of this species on bark of *Acer shirasawanum* at elevation about 1270 m, near the top of Mt. Ibuki, where it grows together with *Graphis rikuzensis* (Vain.) M. Nakan., *Parmelia marmorata* Nyl. and

Phaeophyscia pyrrophora (Poelt) D. D. Awasthi & M. Joshi.

Specimen examined. Japan. Honshu. Prov. Ohmi (Shiga Pref.): Around the summit area, Mt. Ibuki, Maibara, on bark of *Acer shirasawanum*, elevation 1270 m, November 10, 2008, H. Kashiwadani 48941 (TNS).

Lepraria ohmiensis Kashiw., Keis. Kobay. & K. H. Moon, sp. nov.

[Figs. 1C, 1D]

Similis *Lepraria membranacea* sed differt thalli uniformis, non-subfoliaceis, hypothallus albis et acidis lecanoricis et pannaricis continentibus.

Thallus saxicolous or muscicolous, grayish white, continuous, never forming

subfoliose lobes in periphery, sorediate. Soralia subgranular, up to 0.7 mm in diameter. Hypothallus present, white to pale brown. Apothecia not seen.

Type. Japan, Prov. Ohmi (Shiga Pref.): Kawachi-no-fuketsu, Taga-cho, Inukami-gun. On calcareous rocks, elevation about 350 m, July 14, 2008, H. Kashiwadani 48750 (TNS—holotype).

Chemistry: lecanoric acid (major), pannaric acid 6-methyl ester (major), 4-oxypannaric acid 6-methyl ester (major), atranorin (minor), constictic acid (minor), stictic acid (trace) and salazinic acid (trace); chemistry was confirmed by J. Elix (pers. comm.).

Lepraria ohmiensis resembles *L. mem-*

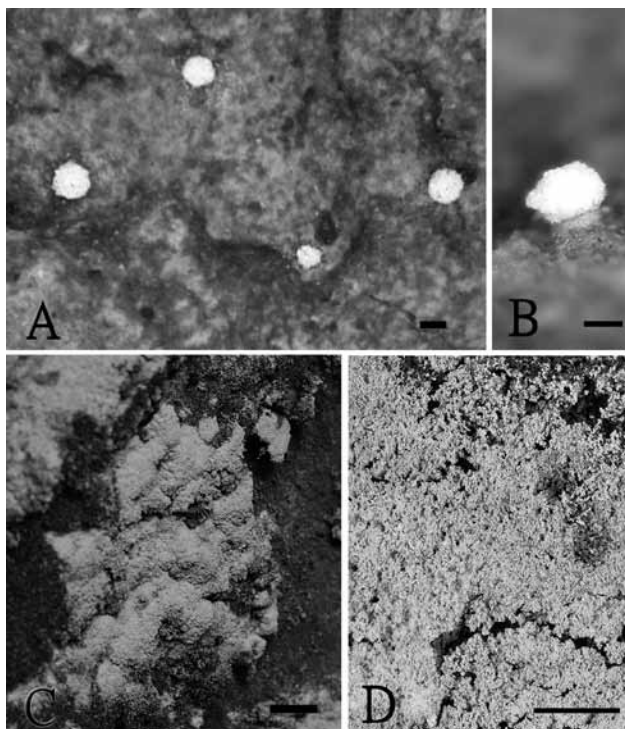


Fig. 1. A. Habit of *Dictyocatenulata alba*, showing scattered synnemata. B. Close up of a synnema. A, B. H. Kashiwadani 48941 (TNS). C. Habit of *Lepraria ohmiensis*, showing thalli over mosses on calcareous rock. D. Crustose thallus of *L. ohmiensis* without definite lobes. C, D. H. Kashiwadani 48750 (TNS). Bars = 0.5 mm (A, B), 1 cm (C, D).

branacea, a species widely distributed in the Northern Hemisphere. However, it can be easily distinguished from the latter by the white to pale hypothallus and by the production of lecanoric acid and pannaric acid esters as major chemical substances. It might be confused with *L. impossibilis* Sipman reported from Central and South America, in having lecanoric and pannaric acid derivatives. The latter species, however, differ in forming delimited thallus margin and lobes.

Lepraria ohmiensis grows on calcareous rocks or over mosses, just outside of a cave. It forms rather large colonies on the type locality, but has not been found in any other locality in Japan.

Other specimens examined. (locality is the same with the type), November 13, 2008, H. Kashiwadani 48873 (TNS).

***Protoblastenia rupestris* (Scop.) Steiner** in Cat. Lich. Univ. 7: 151 (1930).

Characteristic features for this species are 1) dirty white to pale buff crustose thallus with cracks and areoles, 2) saxicolous habit growing on calcareous rocks, 3) orange-brown, biatorine, convex apothecia without definite margin, up to 1.2 mm in diameter, 4) 1-celled, colorless ascospores, $10\text{--}17 \times 5\text{--}8 \mu\text{m}$.

In Japan, it might be confused with *Protoblastenia amagiensis* Räsänen reported from Mt. Amagi, Japan (Type collection: Mt. Amagi, Prov. Suruga, Japan, September 4, 1992, TNS !), which differs in having flat apothecia with smaller spores less than $6 \mu\text{m}$ in length and in the corticolous habit.

Although this species is widely distributed in the Northern Hemisphere (Purvis et al.

1992), it has never been reported from Japan. In the present area, it often grows on calcareous rocks around the summit area of Mt. Ibuki.

Specimen examined. Japan. Honshu. Prov. Ohmi (Shiga Pref.): Around the summit area, Mt. Ibuki, Maibara, on calcareous rocks, elevation 1300 m, November 10, 2008, H. Kashiwadani 48942 (TNS).

We wish to express our sincere thanks to Dr. J. A. Elix for his kind identification of chemical substances of *Lepraria*. Thanks are extended to Dr. A. Aptroot for his help in identifying *Dictyocatenulata* and *Protoblastenia*. Thanks are also to Dr. S. Kurokawa of the Botanic Gardens of Toyama, for critical reading of the manuscript and valuable suggestions.

References

- Aptroot A. and Schiefelbein U. 2003. Additional species of *Cheiriomycina* (lichenized *hyphomycetes*), with a key to the known species. *Mycol. Res.* **107**: 104–107.
- Diederich P., Palice Z. and Ertz D. 2008. *Cheiriomycina ananas* is a synonym of *Dictyocatenulata alba*, widespread, lichenized, synnematous hyphomycete herewith reported as new for Europe. *Sauteria* **15**: 205–214.
- Purvis O. W., Coppins B. J., Hawksworth D. L., James P. W. and Moore D. M. 1992. The Lichens flora of Great Britain and Ireland. 710 pp. Natural History Museum Publication in association with the British Lichen Society.
- Saag L., Saag A. and Randlane T. 2009. World survey of the genus *Lepraria* (Stereocaulaceae, lichenized *Ascomycota*). *Lichenologist* **41**: 25–60.
- Seifert K.S., Okada G. and Rao V. 1987. The synnematous hyphomycete *Dictyocatenulata alba*. *Mycologia* **79**: 459–462.
- Sipman H. J. M. 2004. Survey of *Lepraria* species with lobed thallus margins in the tropics. *Herzogia* **17**: 23–35.

柏谷博之^a, 小林圭介^b, 文光喜^c: 滋賀県
で見つかった地衣類の新種及び稀種

Dictyocatenuata alba Finley & E. F. Morris (サン
トクチイ, 新称) 地衣化しない不完全糸状菌と
してすでに日本から報告されていた (Seifert et
al. 1987) が, Diederich 等 (2008) の研究により
地衣化菌であることが確かめられた. 日本の産
地としては和歌山県と沖縄県が知られており,
このたび滋賀県伊吹山山頂近くのオオイタヤマ
イゲツの幹にも多産することが確認された. 地
衣体は固着性で帯黄緑色, 分生子柄束は肌色,
長さ 1 mm ほどで頂端には類白色の分生子塊を
生じる.

Lepraria ohmiensis Kashiw., Keis. Kobay. & K. H.
Moon (アツミチイ, 新称) 地衣体は固着性,
綿毛状の集まりからなる. 明瞭な裂片は全く発
達せず, 多くの粉芽塊をつける. 仮性菌糸は淡

色で主な地衣成分としてレカノール酸とパンナ
リン酸を持つ. 日本産の *Lepraria lobificans* も同
様の成分を持つが地衣体縁部が明瞭で裂片を持
つので区別できる.

Protoblastenia rupestris (Scop.) Steiner (セツカイ
ニセザクロゴケ, 新称) 石灰岩生の固着地衣類
で亀裂を生じる地衣体と半球状に突出した裸子
器を持ち, 単室, 無色の胞子を持つので他の類
似種から容易に区別できる. 日本の他の石灰岩
地にも産すると思われるが, これまでに日本か
ら報告された記録はない.

(^a 国立科学博物館植物研究部,

^b 滋賀県立短期大学,

^c 韓国・国立生物資源館生物資源研究部)