

## *Dactylospora glaucomarioides* (Ascomycetes, *Dactylosporaceae*): A Lichenicolous Fungus New to South Korea

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The lichenicolous fungi flora of South Korea is poorly known. During recent field trips to various parts of South Korea and after an extensive examination of herbarium lichen specimens, we encountered a lichenicolous fungus growing over a thallus of the lichen *Ochrolechia yasudae* Vain., characterized by small black apothecia with mostly three-septate brown ascospores. It was identified as *Dactylospora glaucomarioides*. This is the first report of this lichenicolous fungus from South Korea. A taxonomic description and comments are presented.

**KEYWORDS :** Ascomycetes, Lichenicolous fungi, Lichens, New record, *Ochrolechia*

Lichenicolous fungi are a diverse group of fungi consisting of over 1,500 species [1], which grow on the thallus or apothecia of lichens, with many new species being described every year. They are usually studied by mycologists who are familiar with lichenized fungi and are often collected by lichenologists.

The lichenicolous fungi flora of South Korea is poorly known. Although many species of lichens have been reported from South Korea, we are aware of only one report of a lichenicolous fungus, *Sphinctrina leucopoda* Nyl. [2]. During recent field trips to various parts of South Korea and after examining lichen specimens housed at herbarium of Korean Lichen Research Institute (KoLRI), we encountered a lichenicolous fungus growing over a thallus of the lichen *Ochrolechia yasudae* Vain., characterized by small black apothecia with mostly three-septate brown ascospores. It was identified as *Dactylospora glaucomarioides* (Willey ex Tuck.) Hafellner, and verified by a holotype study at the Farlow Herbarium (FH) of Harvard University. Here, we provide a taxonomic description along with the hosts, ecology, and illustrations of this species. This is the first report of this lichenicolous fungus from South Korea. Previously it has been reported from eastern North America, Iceland, North Korea and Russia.

*Dactylospora* Körb. (1855) is a wide-spread genus of ascomycetes with over 70 binomials and at least 50 species with a center of distribution in cold to temperate regions of the world [3, 4]. It belongs to the family Dactylosporaceae and is found growing on lichens as a commensalist and as saprobic on hepatics or wood. It is characterized by brownish-black to black apothecia with a

distinct margin; a hemiamyloid hymenium with thin paraphyses having expanded apices; broadly cylindrical to subclavate asci, with a distinctive euamyloid external apical cap; and brown, one-septate to submuriform ascospores.

The specimens were examined using standard microscopical techniques and were hand-sectioned under a NIKON C-PS 1068908 dissecting microscope (Nikon, Tokyo, Japan). All measurements were made on material mounted in water, amyloid reactions were tested with I, and lactophenol cotton blue was used as a stain. A NIKON COOLPIX 4500 was used for taking the photographs of the species. The *O. yasudae* and *D. glaucomarioides* specimens are housed at herbarium of KoLRI, Suncheon National University, Korea. Type specimen of *D. glaucomarioides* were studied from FH, while specimens of *D. parasitica* (Flörke ex Spreng.) Zopf. and *D. saxatilis* (Schaer.) Hafellner were studied from the lichen herbarium of the University of California at Riverside.

### Taxonomic treatment of the species

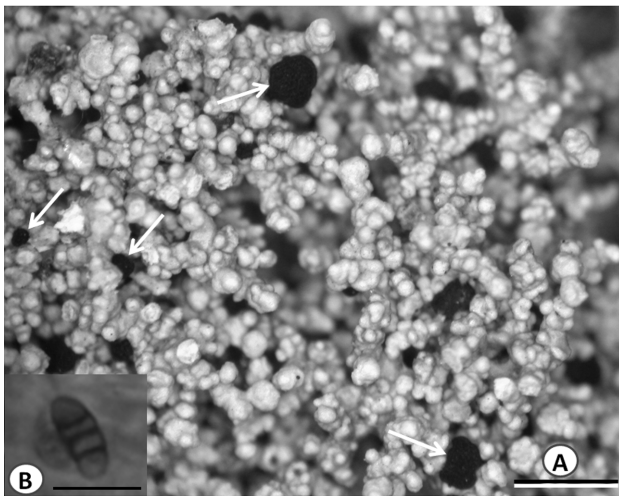
*Dactylospora glaucomarioides* (Willey ex Tuck.) Hafellner (Fig. 1A)

Beih. Nova Hedwigia 62: 109 (1979).

**Basionym.** *Buellia glaucomarioides* Willey ex Tuck., Synops. N. Americ. Lich. 2: 108 (1888). TYPE: U.S.A.: Massachusetts, New Bedford, 1868, H. Willey (FH Holotype).

**Diagnostic characters.** Ascomata apothecia, adpressed to sessile, round to angular, 0.2~0.5 mm diam., disc black, with thin prominent black margin. Hymenium hyaline, 50~65 µm high, hemiamyloid. Hypothecium dark brown. Exciple reddish-brown in section, pseudoparenchymatous.

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**Fig. 1.** *Dactylospora glaucomarioides* and its spore. A, *Dactylospora glaucomarioides* (white arrows pointing to black apothecia), growing over a thallus of *Ochrolechia yasudae* (scale bar = 4 mm); B, Spore of *Dactylospora glaucomarioides* (scale bar = 4 µm).

Paraphyses septate, mostly thin, 1.5–2 µm wide, with apices expanded, mostly 2–3 µm wide. Asci broadly cylindrical to subclavate, 8-spored, 48–60 × 14–20 µm, with euamyloid apical cap. Ascospores brown, 12.5–19 × 5.5–7.5 µm, with 3–4 (~7) transverse septa, often quite various, with occasional longitudinal septa in individual cells (Fig. 1B).

**Hosts.** *Ochrolechia* species; only on *O. yasudae* in South Korea but *D. glaucomarioides* has also been reported growing on *O. tartarea* (L.) Zahlbr in other parts of the world.

**Ecology.** The species was found growing on *O. yasudae* over bark, rock, and moss at elevations between 340–1,473 m.

**Geographical distribution.** This species is common in eastern North America [5, 6] and has been reported from Iceland [7] and North Korea [8]. The recent report from Russia [9] might be a new taxon, as the ascospore size reported from it is slightly longer and wider than *D. glaucomarioides* and moreover it was on an unrelated host, *Megaspora verrucosa* (Ach.) Hafellner & V. Wirth.

**Remarks.** *D. glaucomarioides* is commensalistic on *Ochrolechia* species, causing no visible damage to the host. The species has ascospores 12.5–19 × 5.5–7.5 µm, with 3–5 transsepta, and rarely even six or seven in the Korean specimens, with infrequent longitudinal septa in individual cells. The species is easily confused with *D. parasitica*, which can also occur on *Ochrolechia* species,

but especially differs in having paraphyses with much wider apices (4–5 µm vs. mostly 2–3 µm). *Dactylospora* species can also be easily confused with *Buellia* and related genera but is distinguished by a gelatinous euamyloid apical cap (I+ blue), hemiamyloid hymenium (I+ blue turning red) and lacking a *Bacidia*-type or similar euamyloid tholus.

**Specimens examined.** South Korea, Chungbuk Prov., Jecheon city, Mt. Worak, N 36°51'37.6", E 128°06'13.2", alt. 340 m, on *O. yasudae* growing over rock, September 18, 2004, Jae-Seoun Hur 041173 (KoLRI). Kangwon Prov., Yangyang Co., Seo-myeon, Galjeongokbong, N 37°52'952", E 128°30'161", alt. 1,104 m, on *O. yasudae* growing over *Quercus* bark, May 22, 2009, Y. Joshi & party 090581 (KoLRI); N 37°52'880", E 128°26'849", alt. 1,101 m, on *O. yasudae* growing over bark, May 22, 2009, Y. Joshi & party 090613 (KoLRI).

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