

## AN ADDITION TO THE KNOWLEDGE OF LICHENICOLOUS FUNGI OF IRAN

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*Opegrapha pulvinata* Rehm (Roccellaceae, Ascomycetes) a lichenicolous fungus growing on *Dermatocarpon miniatum*, is reported from Iran for the first time.

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**Key words.** Roccellaceae, *Opegrapha pulvinata*, lichenicolous fungus, new record, Iran.

اضافه‌ای بر یافته‌های قارچ‌های گل‌سنگ‌رست ایران

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قارچ گل‌سنگ‌رست *Opegrapha pulvinata* Rehm (Roccellaceae, Ascomycetes) که بر روی *Dermatocarpon miniatum* رشد می‌کند، برای اولین بار از ایران گزارش می‌شود.

### Introduction

Lichenicolous fungi are a much neglected group of organisms for which recent investigations demonstrated an unexpected diversity. For Iran, a large, geographically and climatically diverse country, hundreds of species are to be expected. While the first checklist (Seaward et al., 2004) lists only eight species, recent studies have considerably increased knowledge of Iran's mycobiota (Seaward et al., 2008; Valadbeighi & Sipman, 2010; Valadbeighi et al., 2010), and approximately 63 lichenicolous species are known by now.

Here an additional species is reported, which was discovered in Ortokand (36°48'N-59°51'E) in the northernmost part of Razavi Khorasan. The site is located in the Hazar Masjid, 59 km south of Kalat, at an elevation of 1480 m. The precipitation is approximately 147 mm/year (Anonymous, 2010) while the presence of a waterfall is favorable for its biodiversity. Very little is known about lichens of Ortokand, only seven species have been reported from the region so far (Seaward et al., 2004; Haji Moniri et al., 2011).

### Material and methods

Samples were collected from four sites in two localities

by the first author. The samples included the lichen host of *Opegrapha pulvinata*, *Dermatocarpon miniatum* (L.) W. Mann, growing on calcareous rocks.

Determination of the investigated taxa was accomplished using standard keys (Heiðmarsson, 2000; Nash et al., 2007). Anatomical structure and hymenial characters were studied with light microscope and the usual test reagents (Orange et al., 2001). In the specimen list below the collecting numbers are given in italics. The specimens are deposited in the second author's private herbarium and with one selected in the Iceland Institute of Natural History, Akureyri, Iceland. Photomicrographs were made with a digital Dinolite - AM423 camera.

### Result and Discussion

*Opegrapha pulvinata* Rehm (lichenicolous fungus) (Figs. 1-4).

*Specimens examined.* Razavi Khorasan: Kalat, Ortokand (36°81'N-59°77'E), 1405 alt. m, over *Dermatocarpon miniatum* on calcareous rock, 10.9.2011, R. Valikhani 2501; Kalat, Ortokand (36°12'07"N-58°47'09"E), 1192 alt. m, over *Dermatocarpon miniatum* on calcareous rock, 7.6.2012, R. Valikhani 2502; Kalat, Ortokand (36°48'35"N-59°46'24"E), 2225 alt. m, over *Dermatocarpon*



Fig. 1. Ascomata of *Opegrapha pulvinata* on thallus of *Dermatocarpon miniatum*.

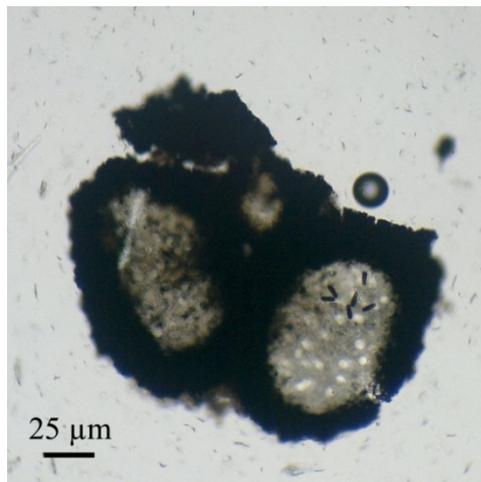


Fig. 2. Section through a multilocular ascoma of *Opegrapha pulvinata*.

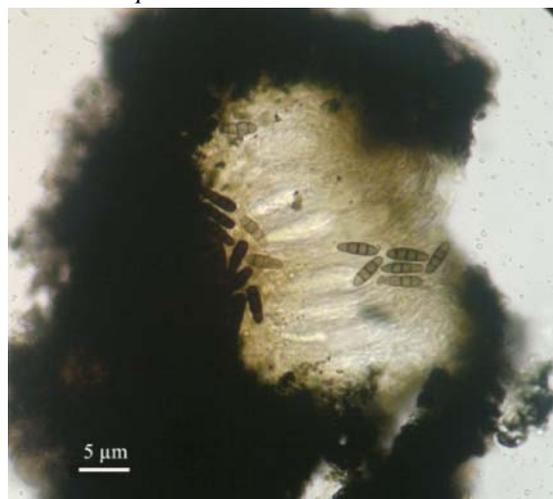


Fig. 3. Section through an ascoma of *Opegrapha pulvinata*.

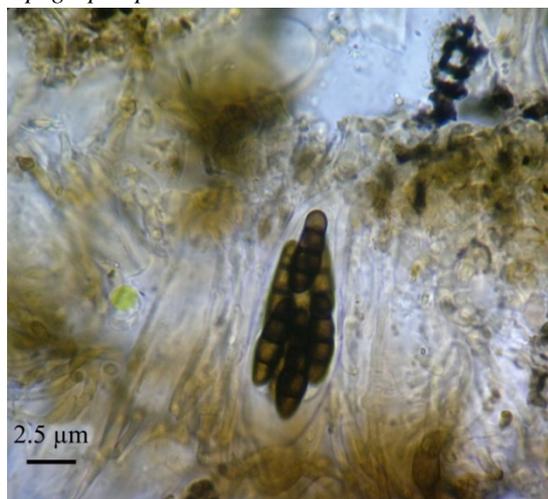


Fig. 4. Ascus with eight brown ascospores observed in K/I.

*miniatum* on calcareous rock, 7.6.2012, R. Valikhani 2503; Kalat, Ortokand (36°33'03"N-59°09'39"E), 1900 alt. m, over *Dermatocarpon miniatum* on calcareous rock, 7.6.2012, R. Valikhani 2504.

The Roccellaceae is a widespread family with considerable morphological and ecological variation. Its taxonomy is currently being reevaluated using DNA sequences (Ertz et al., 2009). The genus *Opegrapha* in the traditional sense comprises species with elongate fruit bodies (lirellate) with carbonized walls, branched paraphyses and ascospores without endospore. It includes lichenized as well as lichenicolous, non-lichenized species, with or without crustose thalli. The lichenicolous *Opegrapha pulvinata* Rehm is quite distinct by its gyrose lirellae forming black, rounded dots on the thallus of the host, and its 4-locular

ascospores soon turning brown. It is rarely reported although the principal host, *Dermatocarpon miniatum*, is a common and conspicuous species. The records suggest that it is widely distributed in Asia, Europe and North America, and grows on various saxicolous members of the Verrucariales (Nash et al., 2007), although the GBIF data portal substantiates only the presence in Europe and North America. The total number of six species of *Opegrapha* known from Iran is now raised to six and it is the first lichenicolous species of the genus known from the country (Seaward et al., 2008).

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