

PSORA HIMALAYANA, A NEW RECORD FOR THE IRANIAN LICHENIZED MYCOTA

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This paper presents a result of studies on lichens in Esfahan province during the period of early June – late September in 2011. *Psora himalayana* (C.Bab.) Timdal is reported as new for Iran. A short description and illustrations of anatomically important characters are presented.

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Key words: Lichen mycota; new record; *Psora himalayana*; Esfahan province, Iran

گزارش آرایه جدید *Psora himalayana* برای مایکوتای گلسنگی ایران

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مقاله حاضر نتیجه مطالعات انجام شده بر روی گلسنگ‌های استان اصفهان، در طی بازه زمانی اوایل خردادماه تا اواخر شهریورماه ۱۳۹۰ می‌باشد.

در این مطالعه گونه *Psora himalayana* (C. Bab.) Timdal نخستین بار برای مایکوتای گلسنگی ایران گزارش می‌گردد. توصیفی مختصر و

تصاویری از خصوصیات آناتومیکی مهم این گونه ارائه می‌گردد.

INTRODUCTION

The Iranian lichen mycota is still incompletely known. However, in recent years an increasing number of studies were devoted to it (e.g., Sohrabi & Orange 2006, Sohrabi & Sipman 2007, Kukwa & Sohrabi 2008, Sohrabi & al. 2010, Sohrabi & Ramezani 2010, Sohrabi & al. 2012 and Westberg & Sohrabi 2012). A recently compiled online checklist has become available in the MYCO-LICH website: www.mycolich.ir (Sohrabi & al. 2010), that is being actively updated (Sohrabi & al. 2010) and lists all reported species in the National checklist, currently close to 800. However, many parts of the territory remain unexplored (Sohrabi & al. 2009, Seaward & al. 2004, 2008), and additional species are discovered quite frequently in the course of floristic studies. During a

survey of lichens of arid and semi-arid regions in Esfahan province, central Iran, we found several new and interesting lichen specimens. We report here *Psora himalayana* as new to the Iranian lichen mycota. A short description and illustrations of anatomically important characters are provided as evidence for the proper identification of the species and as an aid for future identifications.

MATERIALS AND METHODS

The material was collected during four periods of field work in the summer (early June –late September) in 2011 by the senior author (F. Dahmardeh) in Esfahan province in the central part of Iran. Lichen morphology was examined using a Nikon SM2-and 213 stereo microscope, and ascospores were examined using a

Zeiss Axiostar Plus Carl compound microscope. Microscopical examination was carried out on hand-cut sections mounted in water or 10% KOH (K), or Lugol's reagent (I) or with KOH pre-treatment (K/I). Two or more ascomata from each collation were squashed and examined. Spore measurements were made on sections mounted in water; measurements of ascomatal structures follow Timdal (1986, 1991). The specimens are preserved in the reference herbarium of F. Dahmardeh.

New record

Psora himalayana (C. Bab.) Timdal, Bryologist 89(4): 262 (1986).

Illustration: Timdal (1986), p. 262; St.Clair (1999), p. 168; Brodo *et al.* (2001), p. 600.

Thallus squamules, up to 4 mm wide, usually elongated, adnate when young, later usually ascending and imbricate, upper side medium brown or reddish brown to dark brown, dull or slightly shiny, epruinose or more rarely faintly white pruinose especially along the margin, usually with some fissures; margin white, more or less straight, soon becoming crenulate or incised; underside pale brown in central part, white near the margin. Upper cortex 80-160 μm thick, composed of usually rather thick-walled hyphae with round or ellipsoid to angular or cylindrical lumina, lacking crystals except for sparse occurrences of calcium oxalate near the margin in pruinose specimens. Medulla usually containing calcium oxalate in the lower part. Lower cortex not sharply delimited from the medulla, composed of irregularly or mainly anticlinally oriented hyphae with shortly cylindrical lumina, usually containing calcium oxalate. Apothecia up to 2 mm diam, attached laminally to the squamules, simple, strongly convex to hemispherical even when young, dark brown to black, dull or shiny, epruinose or more rarely slightly white (or yellow) pruinose. Ascospores ellipsoid, 9-13 x 6-7 μm (n= 26). Pycnidia laminal, immersed, pycnoconidia bacilliform, 6-8 x 1 μm (fig. 1). Spot tests: upper cortex and medulla K-, C-, KC-, P-, secondary metabolites: none detected.

Specimens examined: Iran, Esfahan, Dare Chah Sefid-Khoros Gelo Pass, 10 km before the village Kohroyeh, 2606 m, on soil, 09 July 2011, Faramarz Dahmardeh, herb. F. Dahmardeh 119.D155. Iran, Esfahan, Mountains located in North East of Bideshk village, 2287 m, on soil, 03 August 2011, Faramarz Dahmardeh, herb. F. Dahmardeh 212.D308.

General distribution: Well distributed in boreal and arctic-alpine areas in the northwestern North America, and also widely distributed in Asia. It was also seen once in easternmost Europe (Timdal 1986).

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REFERENCES

- Brodo, I. M., Sharnoff, S. D., Sharnoff, S. 2001: Lichens of North America, 795 pp. -Yale University Press.
- Kukwa, M. & Sohrabi, M. 2008: *Lepraria impossibilis* new to Asia. -Graphis Scripta 20: 33-34.
- Nash, T. H., Ryan, B. D., Gries, C., Bungartz, F. (eds) 2001: Lichen Flora of the Greater Sonoran Desert Region, Vol. 1. -Lichens Unlimited, Arizona State University, Tempe, AZ.
- Seaward, M. R. D., Sipman, H. J. M., Schultz, M., Maassoumi, A. A., Haji Moniri Anbaran, M. H. & Sohrabi, M. 2004: A preliminary lichen checklist for Iran. -Willdenowia: 543-576.
- Seaward, M. R. D., Sipman, H. J. M. & Sohrabi, M. 2008: A revised checklist of lichenized, lichenicolous and allied fungi for Iran. -Sauteria 15: 459-520.
- Sohrabi, M. & Ghobad-Nejhad, M. [eds] 2010: Myco-Lich: Online Mycology-Lichenology of Iran. <http://www.myco-lich.ir>. Retrieval date Mon 16/12/2013.
- Sohrabi, M. & Ramezani, E. 2010: Some remarkable epiphytic lichens of the Hyrcanian Forests in Mazandaran Province (N. Iran). -Rostaniha 11: 121-131.
- Sohrabi, M. & Sipman, H. J. M. 2007: Lichenized fungi of Golestan National Park, NE (Iran). -Mycologia Balcanica 4: 87-92.
- Sohrabi, M. & Orange, A. 2006: New records of soriediate lichens from Iran. -Iranian Journal of Botany 12: 103-105.
- Sohrabi, M., Seaward, M. R. D., Ahti, T., Sipman, H. J. M. & Schultz, M. 2010: An updated checklist for lichenized, lichenicolous and allied fungi of Iran. <http://www.myco-lich.ir/> Retrieval date: 13/12/2012.
- Sohrabi, M., Sipman, H., Toghranegar, Z. & Nejadstattari, T. 2010: A contribution to the lichenized mycota of Zanjan province (Iran). -Iranian Journal of Botany 16: 125-129.
- Sohrabi, M., Stenroos, S., Myllys, L., Söchtig, U., Ahti, T. & Hyvönen, J. 2012: Phylogeny and taxonomy of the 'manna' lichens. -Mycological Progress. DOI 10.1007/s11557-012-0830-1.
- St. Clair, L. L. 1999: A Color Guidebook to Common

Rocky Mountain Lichens. -M.L. Bean Life Science Museum of Brigham Young University, Provo, Utah. 242 pp.

Timdal, E. 1986: A revision of *Psora* (Lecideaceae) in North America. -Bryologist: 253-275.

Timdal, E. 1991: A monograph of the genus *Toninia* (Lecideaceae, Ascomycetes). -Opera Botanica.

Westberg, M. & Sohrabi, M 2012: A conspectus of the lichen genus *Candelariella* in southwest Asia with emphasis on Iran. -Nova Hedwigia 95: 531-546.

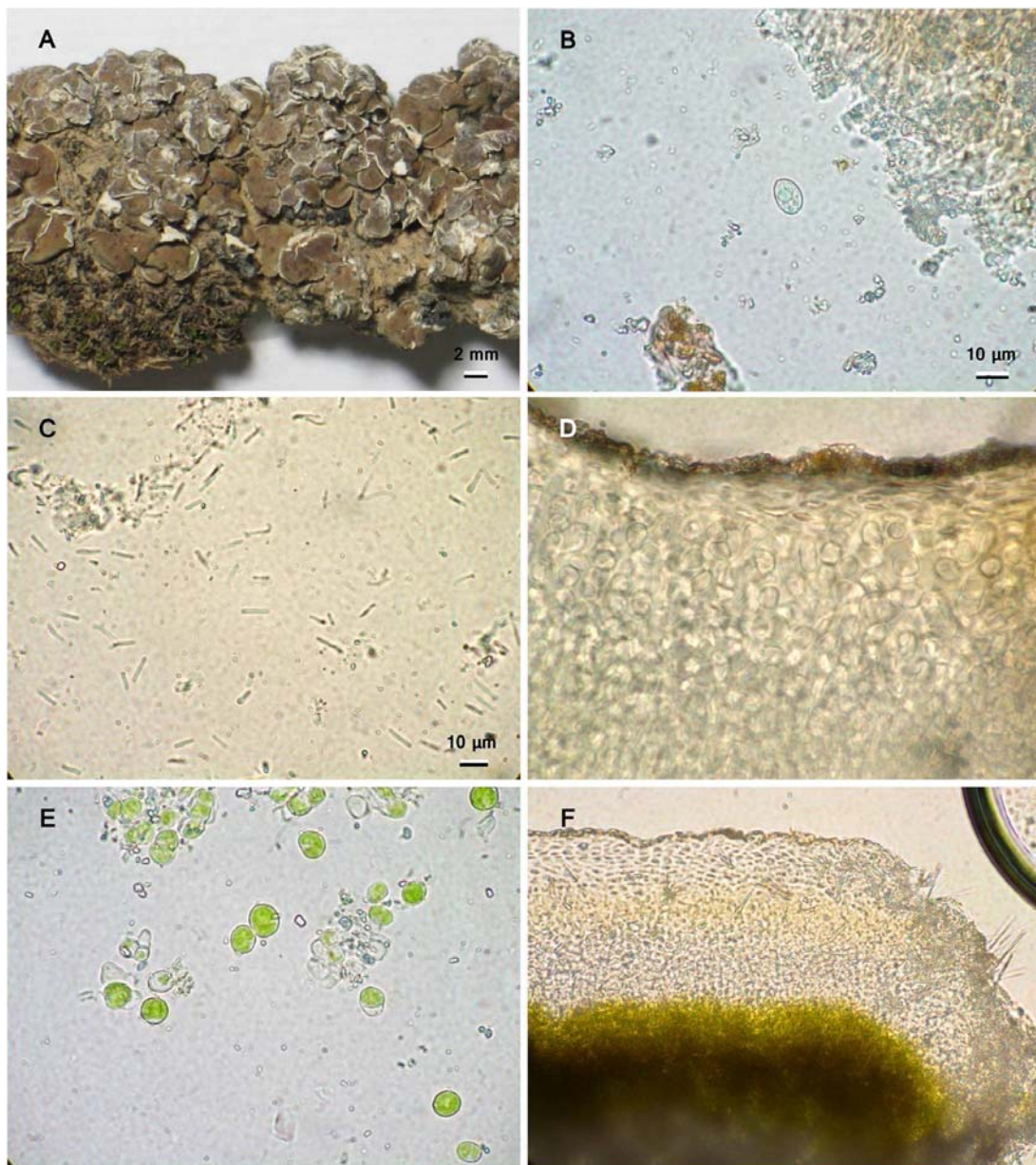


Fig. 1: *Psora himalayana*. A, thallus and apothecia; B, ascospore; C, pycnoconidia; D, upper cortex with thick-walled hyphae with round or ellipsoid to angular or cylindrical lumina; E, symbiotic photobiont (green algae); F, upper cortex containing calcium oxalate only in near the margin.