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The lichen family Physciaceae in Thailand—II. Contributions to the genus *Heterodermia sensu lato*

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Abstract

A revision of 245 *Heterodermia* s.lat. collections from Thailand preserved in RAMK, herb. F. Schumm and herb. K. Kalb is presented. The 39 species found in this material are assigned to the genera *Heterodermia* Trevis. s.str. with a lower cortex and *Pachysporaria*-type ascospores (without sporoblastidia), *Leucodermia* Kalb, *gen. nov.*, with foliose to subfruticose, linear-elongate, ribbon-like, dichotomously branched lobes, loosely attached to the substrate, without a lower cortex, apothecia often with pruinose discs and *Polyblastidium*-type ascospores (with sporoblastidia) and *Polyblastidium* Kalb, *gen. nov.* distinguished by a foliose thallus attached to the substrate, no lower cortex and mostly *Polyblastidium*-type ascospores. The remaining species are assigned to groups without a formal generic name, awaiting further results from molecular phylogenies. The *Heterodermia comosa* group contains species which are similar to *Leucodermia*, but differ in having a subfruticose or rosulate thallus with ascending, spatulate or paddle-shaped lobes and the *Heterodermia obscurata* group which contains species with a fluffy cottony woolly lower surface which is totally or at least partly impregnated by anthraquinones. Standardized descriptions are provided for all the better known *Heterodermia* species s.str. worldwide and all other species found in the material studied or reported for Thailand in the literature, as well as species which might be expected to occur in the country. The new species, *Leucodermia borphyllidiata* Kalb & Meesim, similar to *L. boryi*, but differing in having a phyllidiate thallus is described, and the new combinations, *Leucodermia appalachensis* (Kurok.) Kalb, *L. arsenii* (Kurok.) Kalb, *L. boryi* (Fée) Kalb, *L. ciliatmarginata* (Linder) Kalb, *L. circinalis* (Zahlbr.) Kalb, *L. fertilis* (Moberg) Kalb, *L. leucomelos* (L.) Kalb, *L. lutescens* (Kurok.) Kalb, *L. vulgaris* (Vain.) Kalb, *Polyblastidium appendiculatum* (Kurok.) Kalb, *P. casarettianum* (A. Massal.) Kalb, *P. corallophorum* (Taylor) Kalb, *P. dendriticum* (Pers.) Kalb, *P. fragilissimum* (Kurok.) Kalb, *P. hypocaustium* (Yasuda) Kalb, *P. hypoleucum* (Ach.) Kalb, *P. japonicum* (M. Satô) Kalb, *P. magellanicum* (Zahlbr.) Kalb, *P. microphyllum* (Kurok.) Kalb, *P. neglectum* (Lendemer, R.C. Harris & Tripp) Kalb, *comb. nov.* [Mycobank MB 813853; Basionym: *Heterodermia neglecta* Lendemer, R.C. Harris & Tripp, *The Bryologist* 110(3): 490 (2007)], *P. propaguliferum* (Vain.) Kalb, *P. queenslandicum* (Elix) Kalb, *P. subneglectum* (Elix) Kalb and *P. violostriatum* (Elix) Kalb, are made. *Chaudhuria* Zahlbr. is a synonym of *Heterodermia* s.str. and *Chaudhuria indica* Zahlbr. is an older synonym for *Heterodermia verdonii* Elix, but as the name *Heterodermia indica* (H. Magn.) D.D. Awasthi already exists for another species, the correct name for this taxon reverts to *H. verdonii*. Chemical analyses revealed that *Heterodermia reagens* (Kurok.) Elix must be placed into synonymy with *Polyblastidium propaguliferum* (Vain.) Kalb. Dichotomous keys for the identification of all species are provided. Characteristic TLC profiles for selected species are presented and R_f values for the most important terpenes and pigments are given for the first time in the standard solvents A, B' and C. Photographs showing the species as well as characteristic structures in the genera and groups are also provided. A new epitype for *H. comosa* from Réunion is designated.

Key words: Appalachin, Asia, lichen chemistry, lichen pigments, lichenized Ascomycota, new species, taxonomy

Introduction

In tropical rainforests, members of Graphidaceae play a particularly important role in the composition of lichen communities. Members of Physciaceae, however, dominate in open situations, such as on road side trees, in thornbush forests, dry dipterocarp forests, coastal vegetation or dry evergreen forests (Cáceres *et al.* 2007, 2008), where they grow on various substrates such as bark, wood, rocks or over mosses, especially if more or less basic and/or nutrient rich environments. The genus *Heterodermia* Trevis. s.lat. is quite large and consists of ca. 115 mainly pantropical to subtropical species (www.mycobank.org, accessed: 11 February 2015) with a few species extending into temperate or oceanic regions, e.g. *H. speciosa* and *H. obscurata* (Elix 2011c, Wirth *et al.* 2013).

The first species of *Heterodermia* recorded from Thailand were *Heterodermia albicans* (Vainio 1909) published as *Physcia crispa* var. *mollescens* (Nyl.) Vain. from Trat Province, Koh Chang Island in the Gulf of Thailand, *H. leucomelos* (L.) Poelt, *H. hypoleuca* (Ach.) Trevis. and *H. speciosa* (Wulfen) Trevis. from Chiang Mai Province, Doi Suthep (Vainio 1921). Later, Kurokawa (1959, 1973) added *H. diademata* (Taylor) D.D. Awasthi [as *H. esorediata* (Vain.) Du Rietz & Lyngé] and *H. hypocaustia* (Yasuda) D.D. Awasthi to the lichen biota of Thailand. Wolseley *et al.* (2002) added *H. fragilissima* (Kurok.) J.C. Wei & Y.M. Jiang and *H. microphylla* (Kurok.) Skorepa. Subsequently, Aptroot *et al.* (2007) reported *Heterodermia antillarum* (Vain.) Swinscow & Krog, *H. comosa* (Eschw.) Follmann & Redón, *H. flabellata* (Fée) D.D. Awasthi, *H. galactophylla* (Tuck.) Trevis., *H. isidiophora*