

DOI: 10.11931/guihaia.gxzw201504003

引文格式: 贾泽峰, 李健, 杨梦竹. 广西地衣新记录属——炭刺文衣属 [J]. 广西植物, 2017, 37(2):231–233

JIA ZF, LI J, YANG MZ. *Carbacanthographis* (Graphidaceae), a lichen genus new to China [J]. Guihaia, 2017, 37(2):231–233

Carbacanthographis (Graphidaceae), a lichen genus new to Guangxi

JIA Ze-Feng^{1*}, LI Jian¹, YANG Meng-Zhu²

(1. College of Life Sciences, Liaocheng University, Liaocheng 252059, Shandong, China; 2. College of Life Sciences, Shandong Normal University, Jinan 250014, China)

Abstract: The lichen genus *Carbacanthographis* is reported as new to Guangxi, characterized by the closed disc, carbonized exciple, labia covered with a distinct white pruinose layer, warty periphysoids, and I– or weakly I+, muriform or trans-septate ascospores. The species *C. marcescens* is characterized by the conspicuous lirellae, the laterally carbonized exciple, the hyaline ascospores muriform with $(12.5–20) \times (5–7.5) \mu\text{m}$ size, and the presence of salazinic acid. The specimens examined come from Mt. Shengtang, Jinxiu, Guangxi. So far, only one species reported in the rare genus from China. The species was firstly found in the natural environment and inland of Guangxi, China. Which is very important to the flora study, protection and using of the species resource.

Key words: lichenized Ascomycota, *Ostropales*, Graphidaceae, taxonomy

CLC number: Q949.34 **Document code:** A **Article ID:** 1000-3142(2017)02-0231-04

广西地衣新记录属——炭刺文衣属

贾泽峰^{1*}, 李 健¹, 杨梦竹²

(1. 聊城大学 生命科学学院, 山东 聊城 252059; 2. 山东师范大学 生命科学学院, 济南 250014)

摘 要: 该文报道了文字衣科(Graphidaceae)地衣—广西新记录属——炭刺文衣属(*Carbacanthographis*)。该属主要特征是子囊盘面闭合, 果壳炭化, 盘唇具白色粉霜层, 类缘丝具疣, 子囊孢子砖壁型或横隔双透镜型, I–或微I+。枯炭刺文衣, 标本采自广西金秀圣堂山, 该种特征是线盘明显、盘被两侧炭化、子囊孢子无色砖壁型、孢子大小 $(12.5–20) \times (5–7.5) \mu\text{m}$, 地衣体含有水杨嗉酸。该属是中国稀有属, 迄今仅有1种报道。该种首次在内陆自然环境中发现, 这对于炭刺文衣属及其类群的区系研究、物种保护和利用具有很重要的意义。

关键词: 地衣型子囊菌, 厚顶盘目, 文字衣科, 分类学

The lichen genus *Carbacanthographis* Staiger & Kalb, belonging to Graphidaceae, Ostropales, Lecanoromycetes, Ascomycota, comprises 25 species, distributed mostly in tropical and subtropical regions (Staiger, 2002; Kalb, 2004; Archer, 2006, 2007, 2009; Lücking et al, 2009; Bungartz et al, 2010; Sharma et

al, 2010; Tripp et al, 2010; Sharma & Khadilkar, 2011; Lücking, 2013; Kukwa et al, 2013). As a continuation of an ongoing taxonomic revision of *Graphidaceae* in China (Miao et al, 2007; Jia & Wei, 2009; Jia et al, 2011; Jia & Kalb, 2013; Jia & Kalb, 2014; Cui et al, 2014; Wang et al, 2015; Xu et al, 2015).

收稿日期: 2016-06-01 修回日期: 2016-08-18

基金项目: 国家自然科学基金(31270066, 31093440, 31493010, 31493011) [Supported by the National Natural Science Foundation of China (31270066, 31093440, 31493010, 31493011)]。

作者简介: 贾泽峰(1970–), 男, 山东聊城人, 博士, 教授, 主要从事于地衣生物学研究, (E-mail) zjfia2008@163.com。

* 通信作者

Some small genera including this genus of the family were included. This is the first report of *Carbacanthographis* with a species *C. marcescens* (Fée) Staiger & Kalb from Guangxi, China. Aptroot & Sipman (2001) reported *Graphina marcescens* (Fée) Müll. Arg. from Hong Kong, now the species as synonymy of *C. marcescens* (Fée) Staiger & Kalb (Staiger 2002).

1 Materials and Methods

The specimens are deposited in the Lichen Section of Botanical Herbarium, Shandong Normal University (SDNU). Dissecting microscope (OLYMPUS SZX12) and light microscopes (OLYMPUS BX51 & NIKON

Eclipse-55i) were used for the morphological and anatomical studies. Sections of thalli and ascomata were mounted in water, 10% KOH (K), and Lugol's solution (I). The lichen substances were identified by thin-layer chromatography (TLC) using standardized methods (Culbertson & Kristensson, 1970; Culbertson, 1972; White & James, 1985).

2 Results and Analysis

2.1 *Carbacanthographis* Staiger & Kalb

Biblthca. Lichenol. 85: 98 (2002). Type species: *Carbacanthographis chionophora* (Redinger) Staiger & Kalb.—*Graphis chionophora* Redinger.

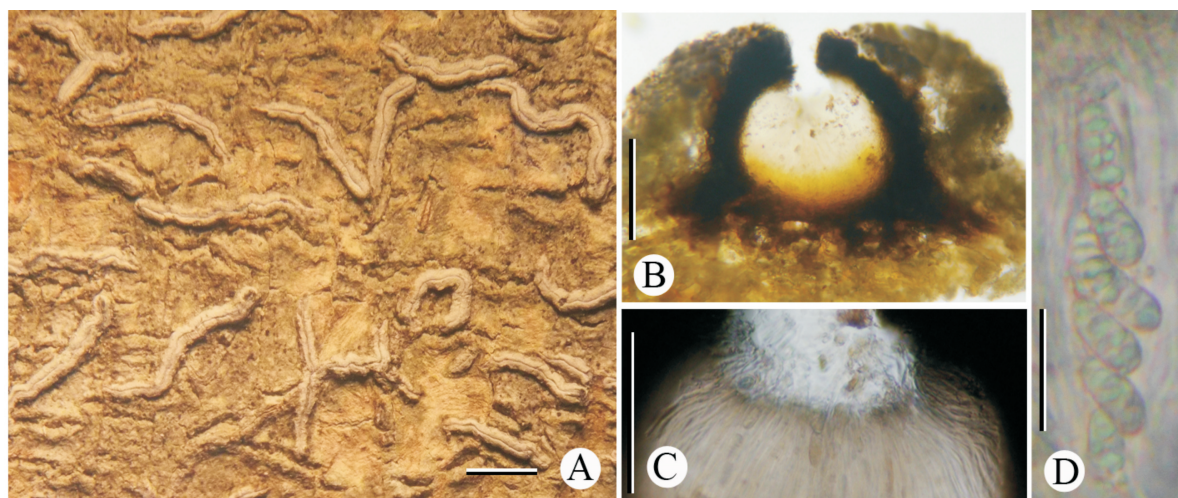


Fig. 1 ***Carbacanthographis marcescens*** (specimen: DF Jiang 20107131) A. Thallus (Scales=1 mm); B. Section of an ascoma (Scale=50 μm); C. The upper part of ascoma with periphysoids (Scale=50 μm); D. Ascus with ascospores (Scale=20 μm).

Thallus is pale fawn to greenish brown, smooth or uneven, dull to glossy. Ascomata lirelliform, conspicuous, sessile, straight or curved, rarely branched; lips closed with white pruinose layer. Proper exciple laterally or completely carbonized, covered by a conspicuous thalline layer. Hymenium not interspersed, I-. Ascospores hyaline, transversely septate to submuriform, I- or I+ pale blue.

Chemistry: Depsidones present.

Substrate: Barks.

Distribution: Tropical to subtropical.

The genus is characterized by a convergent, carbonized exciple, labia covered with a distinct white pruinose

layer in the upper part, warty periphysoids, and I- or weakly I+, muriform or trans-septate ascospores. *Carbacanthographis* is morphologically similar to the allied genus *Acanthothecis* Clem. in having periphysoids, but differs in having carbonized exciple. It is also similar to *Graphis* Adans., in having a well-developed, carbonized, convergent exciple, but the latter differs in lacking periphysoids and having the strongly I+ ascospores.

2.2 *Carbacanthographis marcescens* (Fée) Staiger & Kalb

Fig. 1 A-D

Biblthca. Lichenol. 85: 109 (2002).—*Graphis marcescens* Fée, Essai Crypt. Exot. (Paris): 38 (1825).—*Graphina marcescens* (Fée) Müll. Arg.,

Mém. Soc. Phys. Hist. nat. Genève 29(8): 42 (1887).

Thallus corticate, greyish green to grey, surface uneven and dull. Apothecia lirelliform, conspicuous, white, sessile (completely raised above thallus surface), partially straight or curved, rarely branched, 1–3.5 mm long, 0.2–0.3 mm wide, with a conspicuous powdery thalline margin (often concolorous with thallus). Labia entire and closed. Disc concealed. Proper exciple laterally carbonized, concealed in the thalline margin. Hypothecium hyaline, not inspersed, 50–80 μm high, I–. Paraphyses simple. Periphysoids short, distinctly warty at tips. Ascospores 8 per ascus, ellipsoid, hyaline, muriform, 12.5–20 μm long, 5–7.5 μm wide, 4–5/1–2-locular, I+ weak blue.

Chemistry: salazinic acid, norstictic acid and protocetraric acid (TLC).

Specimens examined: China. Guangxi: Laibin City, Jinxiu, Mt. Shengtang, 1 400–1 800 m, on barks, 07–08/XII/2010, Ming LI 20106748, 20107054; Dai-Feng JIANG 20107131, 20107160; Hai-Ying WANG 20108054 (SDNU).

Distribution and ecology: *Carbacanthographis marcescens* is a widely distributed corticolous species. It has been reported in Australia, the Solomon Islands, Thailand, Cuba, USA, Guyana, Cameroon and Brazil (Staiger, 2002; Archer, 2006). Aptroot & Sipman (2001) reported it as *Graphina marcescens* (Fée) Müll. Arg. from Hong Kong. Our materials were collected on barks from a subtropical montane forest, a habitat similar as those reported outside China. This is the first report of the species from Guangxi, China.

Remarks: *Carbacanthographis marcescens* is characterized by the conspicuous white lirellae, the laterally carbonized exciple, the small muriform ascospores [(12.5–20) μm long, (5–7.5) μm wide] and the presence of salazinic acid. The size of the species reported are: (12–17) $\times$ (5–7) μm (Staiger, 2002) and (12–14) $\times$ (5–6) μm (Archer, 2006). It is similar to *C. salazinica* (A.W. Archer) A.W. Archer, but the latter can be readily differed by the completely carbonized exciples and the larger ascospores [(19–23) μm long, (7–8) μm wide, 6–8/1–2-locular] (Archer, 2006).

Acknowledgements The authors would like to

acknowledge Prof. ZHAO Zun-Tian for his kind offer of specimen on loan.

References:

- APTROOT A, SIPMAN HJM, 2001. New Hong Kong lichens, ascomycetes and lichenicolous fungi [J]. J Hatt Bot Lab, 91: 317–343.
- ARCHER AW, 2006. The lichen family *Graphidaceae* in Australia [J]. Biblioth Lichen, 94: 1–191.
- ARCHER AW, 2007. Key and checklist for the lichen family *Graphidaceae* (lichenized Ascomycota) in the Solomon Islands [J]. Syst Biodivers, 5: 9–22.
- ARCHER AW, 2009. *Graphidaceae* [J]. Fl. Australia, 57: 84–194.
- BUNARTZ F, LÜCKING R, APTROOT A, 2010. The family *Graphidaceae* (*Ostropales*, *Lecanoromycetes*) in the Galapagos Islands [J]. Nova Hedwigia, 90: 1–44.
- CUI C, WANG XH, JIA ZF, 2014. New records of genus *Ocellularia* from China [J]. J Fung Res, 14(4): 79–82. [崔璨, 王晓华, 贾泽峰, 2014. 中国点衣属地衣新记录种. 菌物研究, 14(4): 79–82.]
- CULBERSON CF, 1972. Improved conditions and new data for the identification of lichen products by a standardized thin-layer chromatographic method [J]. J Chromat, 72: 113–125.
- CULBERSON CF, KRISTINSSON H, 1970. A standardized method for the identification of lichen products [J]. J Chromat, 46: 85–93.
- JIA ZF, KALB K, 2013. Taxonomical studies on the lichen genus *Platygramme* (*Graphidaceae*) in China [J]. Lichenologist, 45(2): 145–151.
- JIA ZF, KALB K, 2014. *Thalloloma ochroleucum* (*Graphidaceae*), a new species from Guizhou, China [J]. Mycotaxon, 128: 113–115.
- JIA ZF, MIAO XL, WEI JC, 2011. A preliminary study of *Hemithecium* and *Pallidogramme* (*Graphidaceae*, *Ostropales*, *Ascomycota*) from China [J]. Mycosystema, 30(6): 870–876.
- JIA ZF, WEI JC, 2009. A new species *Thalloloma microsporum* (*Graphidaceae*, *Ostropales*, *Ascomycota*) [J]. Mycotaxon, 107: 197–199.
- KALB K, 2004. New or otherwise interesting lichens II [J]. Biblioth Lichen, 88: 301–329.
- KUKWA M, SCHIEFELBEIN U, FLAKUS A, 2013. A contribution to the lichen family *Graphidaceae* (*Ostropales*, *Ascomycota*) of Bolivia [J]. Herzogia, 26(2): 231–252.
- LÜCKING R, 2013. *Minksia chilena* (C. W. Dodge) Redón & Follmann belongs in *Graphidaceae* and its correct name is *Carbacanthographis chilensis* (Zahlbr.) Lücking [J]. Lichenologist, 45(1): 127–129.
- LÜCKING R, ARCHER AW, APTROOT A, 2009. A world-wide key to the genus *Graphis* (*Ostropales*; *Graphidaceae*) [J]. Lichenologist, 41: 363–452.
- MIAO XL, JIA ZF, MENG QF, WEI JC, 2007. Some species of *Graphidaceae* (*Ostropales*, *Ascomycota*) rare and new to China [J]. Mycosystema, 26(4): 483–506.
- SHARMA BO, KHADIKAR P, MAKHIJA U, 2010. Two species of *Carbacanthographis* from India [J]. Lichenologist, 42: 391–395.
- SHARMA BO, KHADIKAR P. 2011. Two additional new species of *Carbacanthographis* from India [J]. Lichenologist, 43(4): (下转第 184 页 Continue on page 184)