
Some interesting species of *Asterina* from Guangdong, China

Bin Song^{1,2*}, Tai-Hui Li^{1,2} and Fu-Wu Xing³

¹Guangdong Key Laboratory of Microbial Culture Collection and Application, Guangzhou 510070, Guangdong, China

²Guangdong Institute of Microbiology, Guangzhou 510070, Guangdong, China

³South China Institute of Botany, Academia Sinica, Guangzhou 510650, Guangdong, China

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Five species of the genus *Asterina* from Guangdong Province (China) are reported in this paper. Among them *Asterina elaeocarpicola*, *A. garciniae*, and *A. nodosa* are new to China, and *Asterina tetracericola* is described and illustrated as a new species.

Key words: *Asterina tetracericola*, *Asterinaceae*, new species.

Introduction

We are studying the foliicolous fungi deposited in the Herbarium of Guangdong Institute of Microbiology (Song *et al.*, 2002, 2003a,b,c) and in this paper report on five *Asterina* species. *Asterina* Lév. was introduced for a group of obligate parasitic fungi on leaves of higher plants, which are widely distributed in tropical and subtropical regions (Doidge, 1942; Hansford, 1946; Müller and von Arx, 1962; Hosagoudar *et al.*, 2001). Hansford (1946) established the *Asterinaceae* based on following characters: parasitic on leaves of plants; mycelium superficial, brown, forming an open network, with or without appressoria; ascomata superficial, thyriothecial, flattened, dimidiate-scutate, orbicular or rounded, opening by a stellate fissure or crumbling of deliquescent cells at the apex. Kirk *et al.* (2001) acknowledged about 200 taxa, and Hosagoudar and Abraham (2000) list at least 578 species and varieties on various families of hosts. In China, *Asterina* species are mainly distributed to the south of the Yangtze River in subtropical or tropical regions with a warm and humid climate, and at least 35 species and varieties of the genus, including some new species, have been reported mostly from Guangdong and Yunnan Province, China (Ouyang *et al.*, 1995, 1996; Song *et al.*, 2002, 2003b,c). We have critically re-examined specimens and five species occurring in

* Corresponding author: B. Song; e-mail: binsong@gdas.ac.cn

Guangdong, including one new species and three new records for China are reported in this paper.

Taxonomy

Asterina elaeocarpicola Hansf., Reinwardtia 3: 131. 1954. (Figs. 1-3)

Colonies mostly hypophyllous, black, thin, arachnoid to nearly velvety, scattered, up to 8 mm diam., sometime confluent. *Hyphae* brown, sinuous, irregularly branching acutely or obtusely, loosely reticulate, cells mostly 15-35 × 3-4.5 μm. *Appressoria* unicellular, in alternate or unilateral arrangement, 1% opposite, spreading, mostly bent, cylindrical, entire, narrowed at apex, 7.2-17 × 3.5-5 μm. *Ascomata* scattered, black, globose to hemispherical, stellately dehisced at the centre, irregularly crenate to short tassels at the periphery, up to 120 μm diam., surface cells 2.5-3.8 μm wide. *Ascospores* brown, oblong, obtuse, 1-septate, constricted at septum, surface smooth, 20-27 × 9-12 μm.

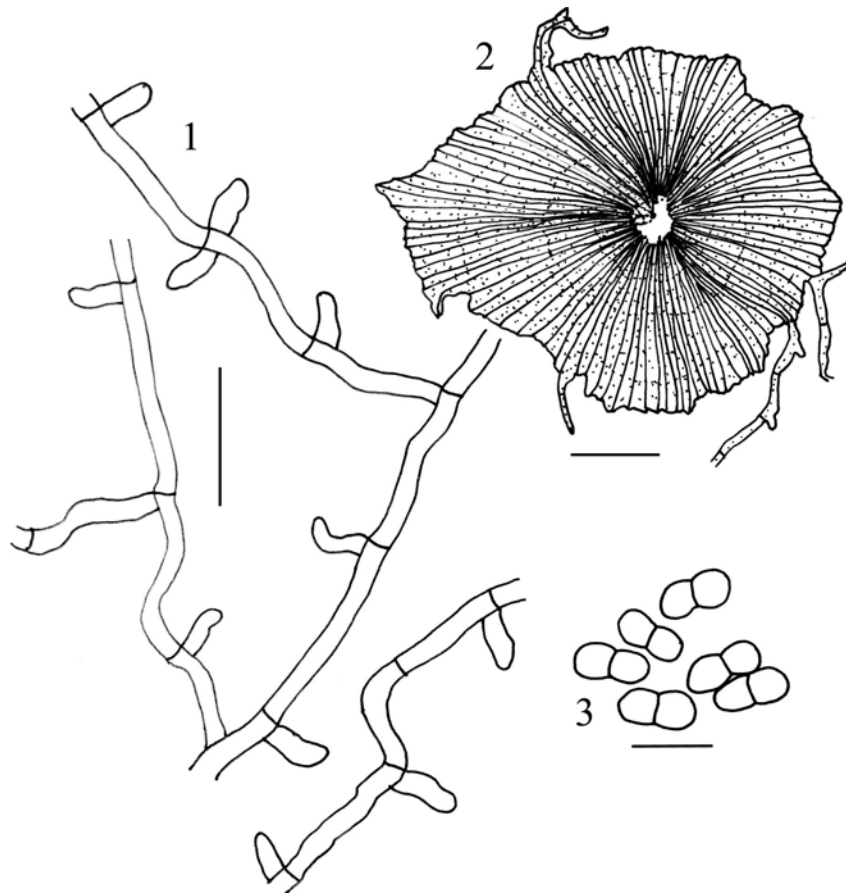
Material examined: CHINA, Heishiding Biosphere Reserve, Fengkai County, Guangdong Province, on leaves of *Elaeocarpus nitentifolius* Merr. & Chun (*Elaeocarpaceae*), 17 October 1992, Y.S. Ouyang and B. Song (HMIGD 34239, 32164).

Notes: *Asterina elaeocarpicola* Hansf. was first described from Java (Hansford, 1954) as parasitic on *Elaeocarpus punctatum*, and is reported here for the first time from China. It is also known from India (Hosagoudar and Goos, 1996).

So far, five taxa of *Asterina* occurring on members of the genus *Elaeocarpus*, namely *Asterina borneensis* Hansf., *A. elaeocarpi* Syd., *A. elaeocarpi* Syd. var. *ovalis* Kar & Ghosh, *A. elaeocarpi-kobanmochi* Yam. and *A. elaeocarpicola* Hansf. have been recorded from Borneo, China, India, Java, and the Philippines (Sydow, 1911; Hansford, 1954; Yamamoto, 1957; Kar and Ghosh, 1986). The main distinguishing characters of *A. borneensis* are that the ascospores are large (45-50 × 22-24 μm) with verruculose ornamentation. In *A. elaeocarpi* var. *ovalis* and *A. elaeocarpi-kobanmochi* appressoria are alternate or opposite, short and wide (7-11 × 3.9-7 μm for *A. elaeocarpi* var. *ovalis*, 7-10 × 4.5-6 μm for the *A. elaeocarpi-kobanmochi*). *Asterina elaeocarpicola* is also similar to *A. elaeocarpi*, but differs in having shorter and wide nearly lobed appressoria (8-11 × 6-8 μm), allowing easy distinction from *A. elaeocarpicola*.

Asterina garciniae Hansf., Proceeding of the Linnean Society, London 158: 44. 1947. (Figs. 4-6)

Colonies mostly epiphyllous, thin, black, arachnoid or nearly velvety, up to 6 mm diam., sometime confluent. *Hyphae* brown, nearly straight or sinuous, opposite or irregular branching acutely or obtusely, loosely or closely reticulate, cells mostly 15-35 × 3.5-5 μm. *Appressoria* unicellular, in alternate

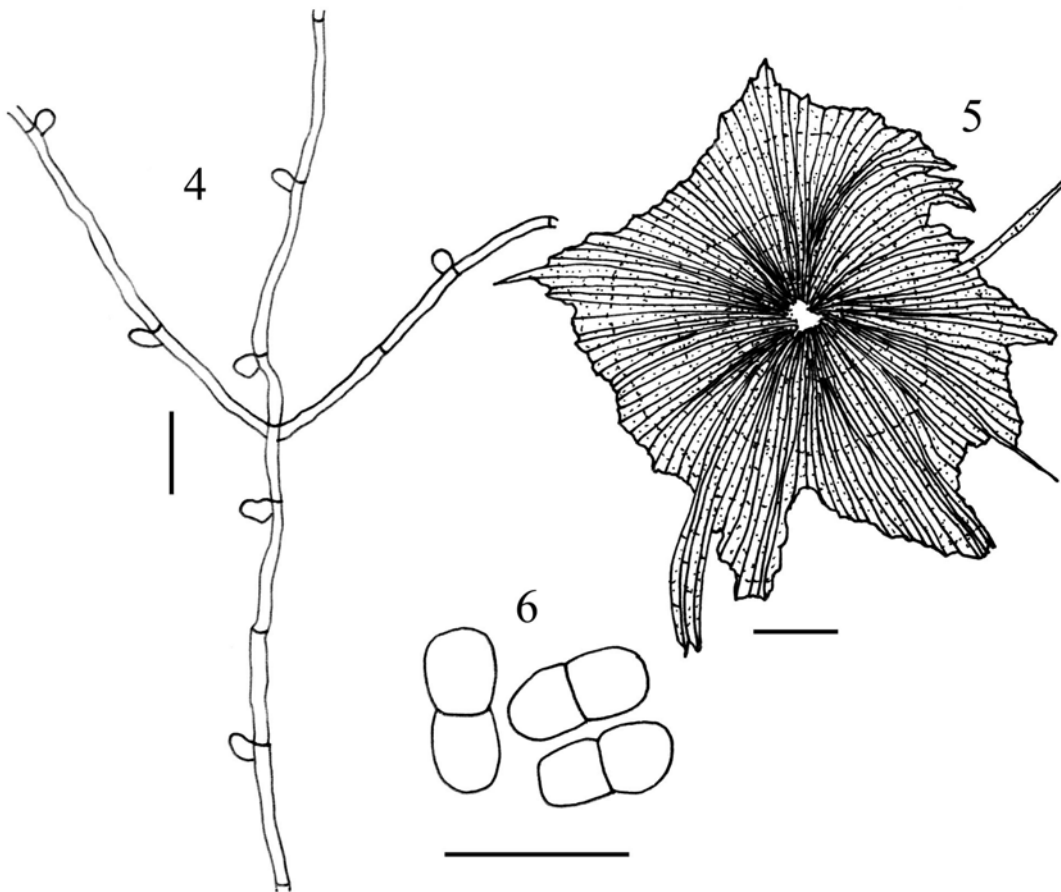


Figs. 1-3. *Asterina elaeocarpicola* 1. Hyphae with appressoria. 2. Ascomata. 3. Ascospores. Bar = 25 μ m.

or unilateral arrangement, spreading, straight or bent, nearly globose or clavate, entire, 10-11.5 \times 5.8-6.5 μ m. *Ascomata* scattered to nearly aggregate, black, orbicular or hemispherical, stellately dehiscent at the centre, irregularly crenate to shortly tasseled at the periphery, up to 150 μ m diam., surface cells 2.5-3.5 μ m wide. *Ascospores* brown, oblong, 1-septate, obtuse with rounded ends, constricted at septum, surface smooth, 18.5-22.5 \times 7.9-12 μ m.

Material examined: CHINA, Heishiding Biosphere Reserve, Fengkai County, Guangdong Province, on leaves of *Garcinia oblongifolia* Champ. (*Guttiferae*), 16 October 1992, Y.S. Ouyang and B. Song (HMIGD 34238).

Notes: *Asterina garciniae* was first described by Hansford (1947) from India, as parasitic on *Garcinia mangostanae*, and is reported here for the first



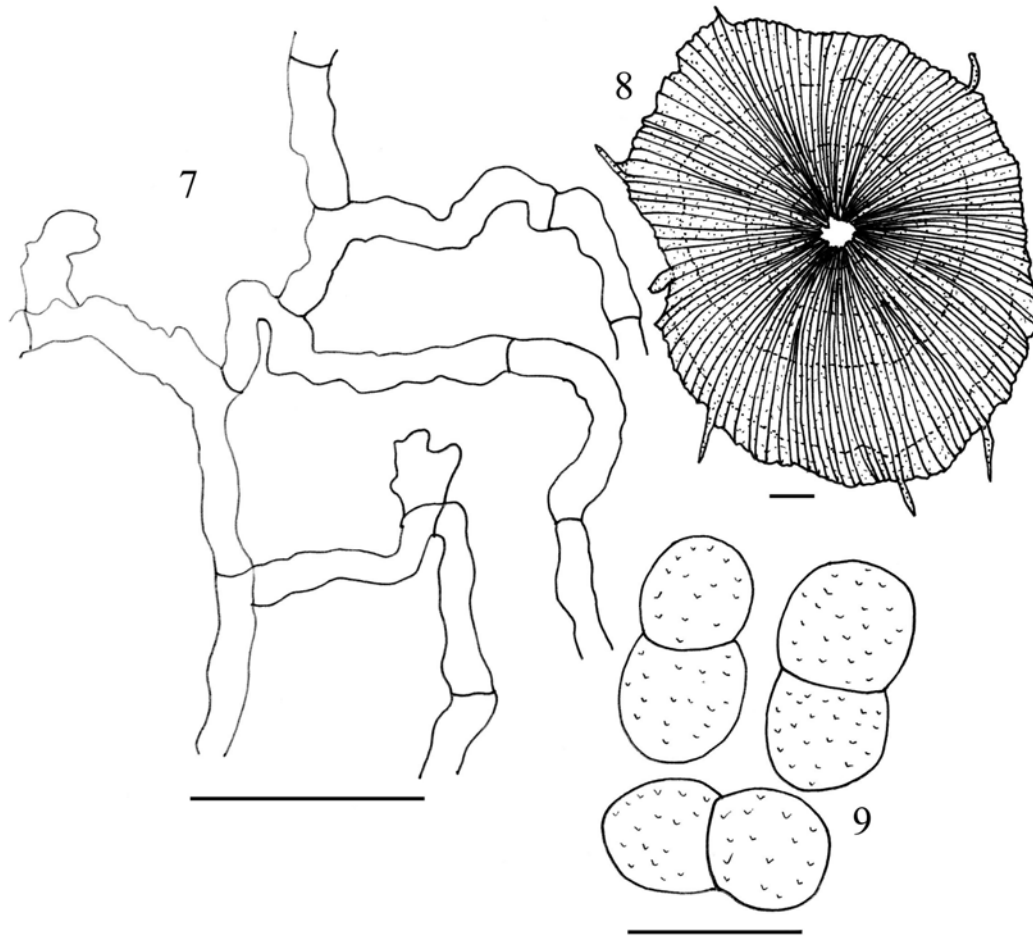
Figs. 4-6. *Asterina garciniae* 4. Hyphae with appressoria. 5. Ascomata. 6. Ascospores. Bar = 25 μ m.

time from China. It is also similar to *Asterina garciniicola* Y.S. Ouyang *et al.* (1995), but differs from latter species in having larger ascospores (25-30 μ m long and 14-18 μ m wide) with verruculose ornamentation.

Asterina nodosa Doidge, Bothalia 4: 335. 1942.

(Figs. 7-9)

Colonies hypophyllous, black, thin to nearly dense, arachnoid to nearly velvety, scattered, up to 15 mm diam., mostly confluent. *Hyphae* brown, sinuous to rather tortuous or geniculate, irregular branching acutely, loosely or densely reticulate, cells mostly 20-43 \times 2.8-4.8 μ m. *Appressoria* unicellular, in alternate or unilateral arrangement, mostly bent or curved, often irregular or obtusely nearly lobate, 7.5-13 \times 5-9 μ m. *Ascomata* nearly aggregate to scattered, black, orbicular or hemispherical, stellately dehiscent at the centre,

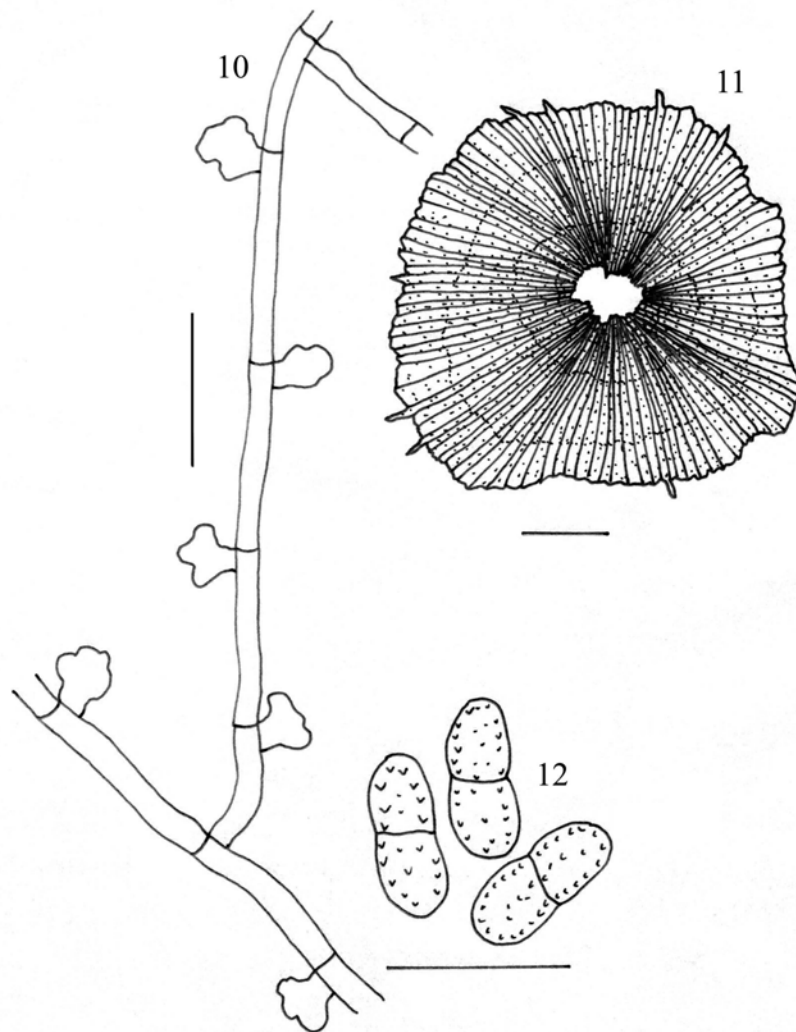


Figs. 7-9. *Asterina nodosa* 7. Hyphae with appressoria. 8. Ascomata. 9. Ascospores. Bar =25 μm .

irregularly crenate to shortly tasseled at periphery, up to 220 μm diam., surface cells 2-3 μm wide. *Ascospores* brown, oblong-ellipsoid, 1-septate, obtuse with rounded ends, constricted or strongly constricted at septum, surface echinulate, 23-33 \times 12-17 μm .

Material examined: CHINA, Nankun Shan, Guangdong Province, on leaves of *Ilex dasyphylla* Merr. (*Aquifoliaceae*), 12 July 1987, Y.X. Hu (HMIGD 34382); Fengkai County, Guangdong Province, on leaves of *Ilex ficoidea* Hemsl. (*Aquifoliaceae*), 17 October 1992, B. Song and Y.S. Ouyang (HMIGD 34334).

Notes: *Asterina nodosa* was described by Doidge (1942) from South Africa, as parasitic on *Ilex mitis*, and is reported here for the first time from China. This species was often associated with *A. bottomleyae* Doidge (1942) and *A. hendersonii* Doidge (1920) on the same leaves. It differs from *A.*



Figs. 10-12. *Asterina tetracericola* **10.** Hyphae with appressoria. **11.** Ascomata. **12.** Ascospores. Bar = 25 μm .

bottomleyae in having alternate or opposite appressoria with larger ascospores (33-39 μm long and 15-20 μm wide). *Asterina nodosa* differs from *A. hendersonii* in having smaller appressoria (5-7.5 \times 5-6 μm), and smaller ascospores (11-15 μm long and 10-12.5 μm wide) with a smooth surface.

Asterina tetracericola B. Song, T.H. Li & F.W. Xing, **sp. nov.** (Figs. 10-12)

Coloniae epiphyllae, subdensae, atrae, arachnoideae vel subvelutinae, ad 3 mm diam. *Hyphae* atro-brunneae, sinuatae, opposite vel irregulariter acuteque vel wideque ramosae, laxae vel dense reticulatae, cellulis plerumque 28-35 \times 3-4 μm . *Appressoria* unicellula, alternata vel unilatera, laxa, antrorsa, ovata vel subglobosa, angulosa vel lobata, 5.5-10 \times 5.5-9 μm . *Ascomata* dispersa vel subaggregata, atra, orbiculata vel hemisphaeria, ad 130 μm diam.,

stellate dehiscencia ad centrum, irregulariter margina crenata vel fimbriata, cells 3-4 μm lata. *Ascospores* atro-brunneae, oblongae, 1-septatae, obtusae, constrictae, echinulatae, 20-23 \times 8-10 μm .

Etymology: *tetracericola*, in reference to the host species, *Tetracera asiatica*.

Colonies epiphyllous, nearly dense, black, arachnoid to nearly velvety, up to 3 mm diam. *Hyphae* brown, sinuous, opposite or irregular branching acutely or obtusely, loosely to closely reticulate, cells mostly 28-35 \times 3-4 μm . *Appressoria* unicellular, in alternate or unilateral arrangement, spreading, ovate to nearly globose, angulose to lobe, 5.5-10 \times 5.5-9 μm . *Ascomata* scattered to nearly aggregate, black, orbicular to hemispherical, stellately dehiscent at the centre in maturity, irregularly crenate to shortly tasseled at periphery, up to 130 μm diam., surface cells 3-4 μm wide. *Ascospores* brown, oblong, 1-septate, obtuse, constricted at septum, surface echinulate, 20-23 \times 8-10 μm .

Material examined: CHINA, Dinghu Shan, Guangdong Province, on leaves of *Tetracera asiatica* (Lour.) Hoogl. (*Dilleniaceae*), December 1978, G.Z. Jiang (HMIGD 34158, **holotype designated here**).

Notes: The new species is similar to *Asterina tetracerae* Syd. and *Asterina scruposa* Syd. var. *longipoda* Hughes. The main distinguishing characters of *A. tetracerae* are that the ascospores have a smooth surface (Sydow, 1931). The main distinguishing characters of *A. scruposa* var. *longipoda* are that the hyphae are larger (7-9 μm), and the appressoria are cylindrical (11-22 \times 5-6 μm) (Hughes, 1952).

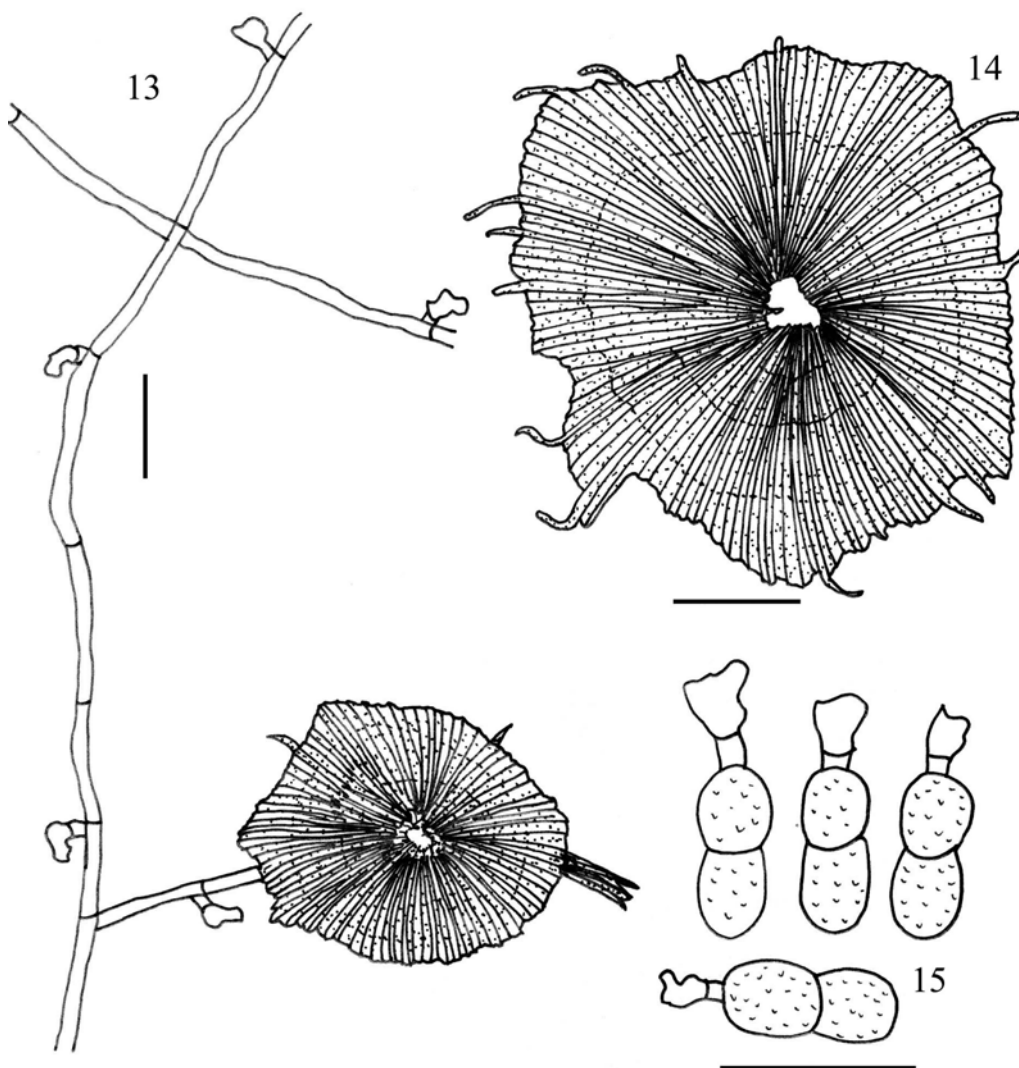
Asterina yamamotoicola (Yam.) Hosagoudar & Abraham, Journal of Economic and Taxonomic Botany 24: 569. 2000. (Figs. 13-15)

Colonies epiphyllous, black, thin, arachnoid or nearly velvety, orbicular or irregular, up to 3 mm diam., sometime confluent. *Hyphae* brown, nearly straight or sinuous, opposite or alternate branching acutely or obtusely, loosely to closely reticulate, cells mostly 25-45 \times 3-5 μm . *Appressoria* bicellular, in alternate or unilateral arrangement, spreading, mostly straight, 7.5-15 μm long; stalk cells cylindrical to cuneate, 2.5-5 μm long; head cells ovate or nearly globe, mostly 1-3-lobed, 5.5-10 \times 5-8 μm .

Ascomata scattered to nearly aggregate, black, orbicular or hemispherical, stellately dehiscent at the centre, irregularly crenate to shortly tasseled at periphery, up to 120 μm diam., surface cells 1.8-3.3 μm wide. *Ascospores* brown at ends, oblong, 1-septate, obtuse with rounded ends, constricted at septum, surface minor echinulate, 20-23 \times 7.5-10 μm .

Material examined: CHINA, Wuhua County, Guangdong Province, on leaves of *Casearia villilimba* Merr. (*Samydaceae*), September 1987, H. Hu (HMIGD 34165).

Notes: *Asterina caseariae* Yam. was first described by Yamamoto (1957) from Taiwan (China), as parasitic on *Casearia merrilli*. This is hononym of



Figs. 13-15. *Asterina yamamotoicola*. 13. Hyphae with appressoria and ascomata. 14. Ascomata. 15. Ascospores. Bar = 25 μ m.

Asterina caseariae Hansford (1944) and Hosagoudar and Abraham (2000) renamed it *Asterina yamamotoicola*. This species is reported here for the first time from the Chinese mainland. This species is similar to *A. caseariae* Hansford (1944), but differs from latter in having opposite appressoria with smaller ascospores (16-20 \times 8-9 μ m). This species is also similar to *A. caseariicola* Hosagoudar and Goos (1996), but differs from latter in having 5% opposite appressoria, larger ascospores (18-22 \times 11-13 μ m) with a smooth surface.

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