

## New records of foliicolous micromycetes from the Chinese Jiangxi Province

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**Abstract:** Braun, U., Hönig, L. & Schwaß, R. 2016: New records of foliicolous micromycetes from the Chinese Jiangxi Province. *Schlechtendalia* **30**: 1–7.

During the course of mycological examinations in a forest biodiversity-ecosystem functioning experiment (BEF-China Experiment) carried out in a subtropical forest site near Xingangshan, Jiangxi Province, China, numerous leaf-inhabiting micromycetes have been collected and identified, including a few new species. Some collections proved to represent new or second records for China, in other cases new host species were involved. New and interesting records of the following species are listed and briefly discussed in this paper: *Gloeosporium elaeocarpi* on *Elaeocarpus glabripetalus*, *Periconiella liquidambaricola* on *Schima superba*, *Phyllosticta anacardiacearum* on *Elaeocarpus glabripetalus* and *E. japonicus*, *Pseudocercospora ailanthicola* on *Ailanthus altissima*, *P. chibaensis* on *Nyssa sinensis*, *P. elaeocarpicola* on *Elaeocarpus chinensis* and *E. japonicus*, *P. fukuokaensis* on *Alniphyllum fortunei*, *P. sapindi-emarginati* on *Koelreuteria bipinnata*, and *Trochophora fasciculata* on *Daphniphyllum oldhamii*.

**Zusammenfassung:** Braun, U., Hönig, L. & Schwaß, R. 2016: Neuangaben von blattbewohnenden Mikromyzeten aus der Chinesischen Jiangxi Provinz. *Schlechtendalia* **30**: 1–7.

Im Verlauf mykologischer Untersuchungen in einem Experiment zur Biodiversität und zu Ökosystemfunktionen (BEF-China Experiment), durchgeführt in subtropischen Walduntersuchungsflächen nahe Xingangshan, Jiangxi Provinz, China, wurden zahlreiche blattbewohnende Mikromyzeten gesammelt und identifiziert, einschließlich einiger neuer Arten. Einige Kollektionen stellten sich als Erst- oder Zweitfunde für China heraus, in anderen Fällen waren neue Wirtsarten involviert. Neue und interessante Funde folgender Arten werden in dieser Arbeit aufgelistet und kurz diskutiert: *Gloeosporium elaeocarpi* auf *Elaeocarpus glabripetalus*, *Periconiella liquidambaricola* auf *Schima superba*, *Phyllosticta anacardiacearum* auf *Elaeocarpus glabripetalus* und *E. japonicus*, *Pseudocercospora ailanthicola* auf *Ailanthus altissima*, *P. chibaensis* auf *Nyssa sinensis*, *P. elaeocarpicola* auf *Elaeocarpus chinensis* und *E. japonicus*, *P. fukuokaensis* auf *Alniphyllum fortunei*, *P. sapindi-emarginati* auf *Koelreuteria bipinnata* und *Trochophora fasciculata* auf *Daphniphyllum oldhamii*.

**Key words:** pathogenic fungi, China, new discoveries, new hosts.

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The BEF-China Experiment is the worlds' largest tree diversity experiment comprising two sites in a subtropical forest near Xingangshan, Jiangxi Province, China, and was established in 2009/10 (Bruehlheide et al. 2013). During the course of examinations within the scope of a mycological subproject dealing with basic ecological questions to the role of leaf-inhabiting micromycetes in relation to the diversity of subtropical tree species and vice versa, numerous fungal species on a wide range of tree species have been collected and identified, including several new and second records for China and some new host species. The records concerned are included in the following annotated list (all collections have been made in China, Jiangxi Province, Xingangshan, BEF-China Experiment, sites A and B, 2014/15, leg. S. Bien and L. Hönig, and voucher specimens are deposited at HAL).

***Gloeosporium elaeocarpi*** C.C. Chen, Mem. Coll. Agric. Natl. Taiwan Univ. **8**(2): 70, 1965.

Material examined: On *Elaeocarpus glabripetalus*, Apr. 2014, leg. L. Hönig (HAL 3079 F).

Notes: This species was described from Taiwan on *Elaeocarpus sylvestris* (Chen 1965). This is the first record of this species from Mainland China on a new host species. The acervuli (to 200 µm diam) and conidia (10–15 × 5–7 µm, with a truncate base, about 2 µm wide) agree well with the original description of this species. This acervular species on *Elaeocarpus* was assigned to *Gloeosporium* Desm. & Mont. (*s. lat.*) comprising a wide heterogeneous range of unrelated species. Höhnelt (1910) demonstrated that the type species of *Gloeosporium*, *G. castagnei* Desm. & Mont. has 1-septate conidia and pertains to *Marssonina* Magnus (Sutton 1980). Species with aseptate conidia belong to various other genera and have to be reallocated, but a modern reassessment of *G. elaeocarpi* is not yet available.

***Periconiella liquidambaricola*** U. Braun, S. Bien & Hönig, Mycotaxon **130**: 254, 2015.

Material examined: On *Schima superba*, Sep. 2015, leg. L. Hönig (HAL 2990 F).

Notes: *Periconiella liquidambaricola* has recently been described from site A of the BEF-China Experiment on leaves of *Liquidambar formosana*, *Altingiaceae* (Braun et al. 2015), but only a short time after its description a *Periconiella* morphologically indistinguishable from the latter species has been found and identified on leaves of

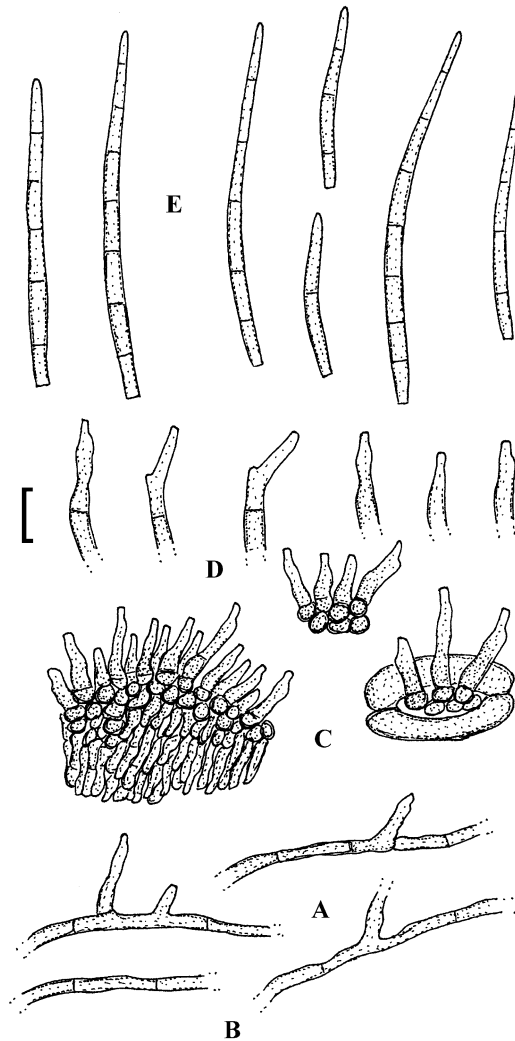
*Schima superba* (Theaceae) in neighbouring plots. *P. liquidambaricola* occurs on the epidermis of green leaves and does not cause any distinct lesions. The new morphologically indistinguishable collections on *Schima superba* shed another light on the biology of *P. liquidambaricola*, which is probably not host-specific, i.e. it seems to have a wider host range, and might be an endophyte or not genuinely biotrophic at all. Wider host ranges of *Periconiella* species are probably not unusual. Kirschner et al. (2014) recently described collections found in Panama on *Hymaenea courbaril* (Fabaceae) and *Tabebuia* cf. *rosa* (Bignoniaceae), which were referred to as *Periconiella geonomae* M. B. Ellis, known from palms of the genus *Geonoma*.

***Phyllosticta anacardiacearum* Aa, Stud. Mycol. 5: 31, 1973.**

= *Guignardia mangiferae* A.J. Roy, Indian Phytopathol. 20(4): 348, 1968.

Material examined: On *Elaeocarpus glabripetalus* and *E. japonicus*, Sep. 2014, leg. L. Höning (HAL 2989 F).

Notes: Lou et al. (2009) published the first record of this species on *Elaeocarpus glabripetalus* from China, based on cultures and molecular sequence analyses. This is the second field collection in China on *Elaeocarpus glabripetalus*, and *E. japonicus* is a new host. The morphological characters agree well with pycnidia and conidia of this species (Bai et al. 2003, Lou et al. 2009, Zhang et al. 2015): Leaf spots marginal and semicircular or subcircular when in the midst of the lamina, brown or ochraceous, 4–10 mm diam., with a narrow darker border or marginal line, slightly raised; pycnidia amphigenous, scattered to gregarious, 90–110 µm diam., punctiform, blackish; conidia broadly ellipsoid-obovoid, rarely subcylindrical, (8–)9–13 × (4–)5–7 µm, ends broadly rounded, with a mucilaginous sheath.



**Fig. 1:** *Pseudocercospora ailanthicola* (HAL 2989 F), A – Superficial hyphae, B – Solitary conidiophores arising from superficial hyphae, C – Conidiophore fascicles, D – Conidiophores, E – Conidia. Bar – 10 µm. U. Braun del.

***Pseudocercospora ailanthicola* (Patw.) Deighton, Mycol. Pap. 140: 138, 1976.**

Fig. 1

Material examined: On *Ailanthus altissima*, Sep. 2014, leg. L. Höning (HAL 2987 F).

Notes: This species is known from India on *Ailanthus excelsa* (Kamal 2010). A first record of *P. ailanthicola* from China on *Ailanthus altissima* (= *A. glandulosa*) was published by Guo & Hsieh (1995) and Guo et al. (1998). The present collection from Jiangxi Province represents the second Chinese record. The new Chinese collection is characterised by having superficial hyphae with solitary lateral conidiophores formed on the lower leaf surface (hyphae unbranched to branched, 1–3.5 µm wide, septate, pale olivaceous-brown or brownish, thin-walled, smooth), which have not yet been described, neither in the original description nor in Guo & Hsieh (1995) and Guo et al. (1998).

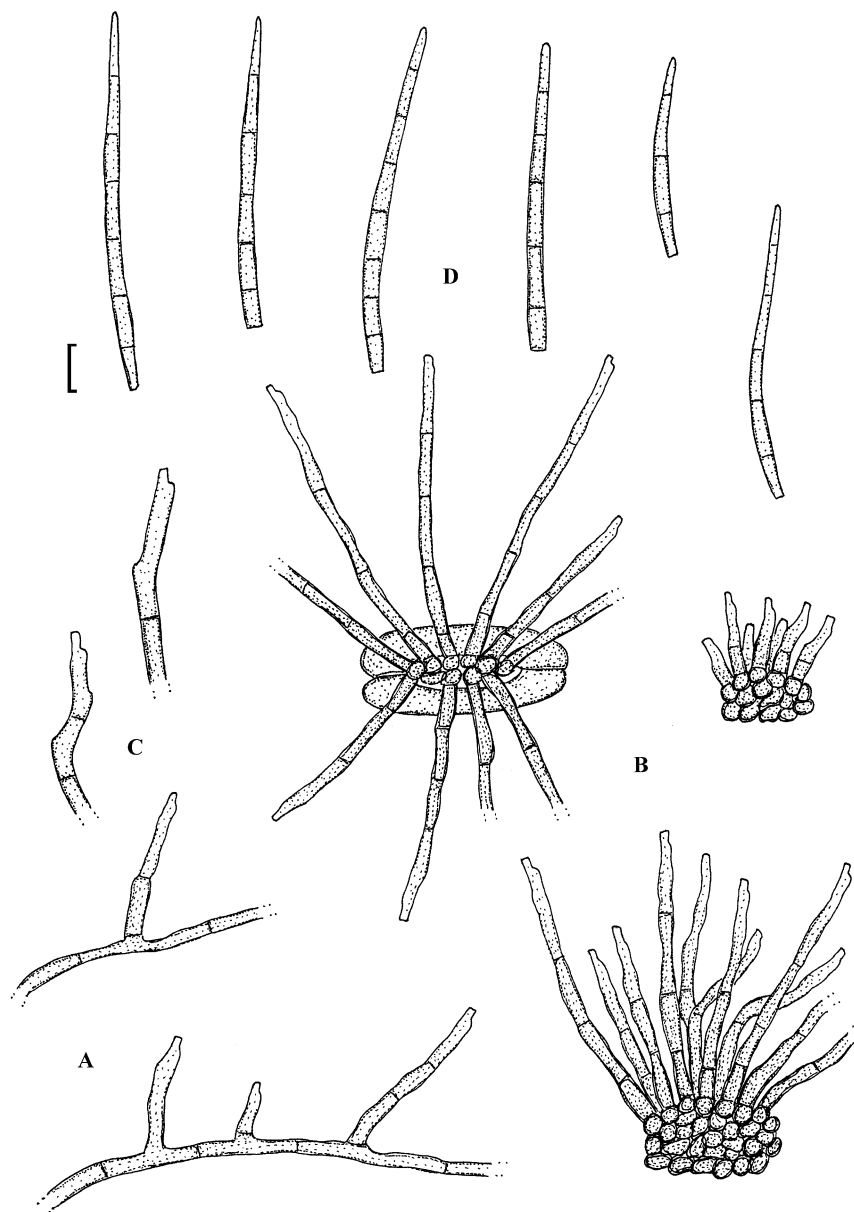
***Pseudocercospora chibaensis* Tak. Kobay & Nagash., Trans. Mycol. Soc. Japan 32: 328, 1991.**

Fig. 2

Material examined: On *Nyssa sinensis*, Sep. 2013, leg. S. Bien (HAL 2991–2993 F).

Notes: *P. chibaensis* was described from Japan on *Nyssa sinensis* which is an exotic ornamental plant in this country (Kobayashi et al. 1991). The present Chinese collections represent the first records of this species after its introduction and in particular from the original range of the host. Besides the deposited voucher specimens, several additional collections have been made. This species seems to be relatively common on *Nyssa sinensis* in the study

area. The Chinese collections of *P. chibaensis* are characterised as follows: Leaf spots amphigenous, 0.5–5 mm diam., subcircular to slightly angular-irregular, pale to medium brown or later greyish brown, centre finally greyish white, margin narrow, darker brown. Caespituli ampigenous, puctiform on the upper leaf surface, scattered, dark brown, less conspicuous below. Mycelium internal and partly external; hyphae sparingly branched, 1.5–4  $\mu\text{m}$  wide, septate, pale olivaceous to medium olivaceous-brown, thin-walled, smooth. Stromata mainly on the upper leaf surface, lacking or small below, 10–40  $\mu\text{m}$  diam., immersed, brown, cells 2–6  $\mu\text{m}$  diam, brown, walls slightly thickened. Conidiophores in small to moderately large, loose to moderately dense fascicles, arising from internal hyphae or stromata, through stomata or erumpent (on the upper leaf surface with larger and denser fascicles arising from stromata, erumpent, below with smaller and looser fascicles, emerging through stomata), or conidiophores solitary, arising from superficial hyphae on the lower leaf surface, lateral, conidiophores erect, straight, subcylindrical to distinctly geniculate-sinuuous, unbranched, 10–80  $\times$  3–5  $\mu\text{m}$ , 0–4-septate, pale to medium olivaceous or olivaceous-brown, thin-walled, smooth; conidiogenous cells integrated, terminal, occasionally conidiophores reduced to conidiogenous cells, 10–30  $\mu\text{m}$  long, conidiogenous loci inconspicuous or visible as truncate tips or truncate lateral shoulders caused by sympodial proliferation. Conidia solitary, obclavate-cylindrical, shorter conidia sometimes fusiform, straight to somewhat curved, 30–80  $\times$  2.5–4.5  $\mu\text{m}$ , 2–8-septate, pale to medium olivaceous or olivaceous-brown, thin-walled, smooth, apex subacute to obtuse, base short obconically truncate, 1.5–2.5  $\mu\text{m}$  wide, hila unthickened, not darkened.

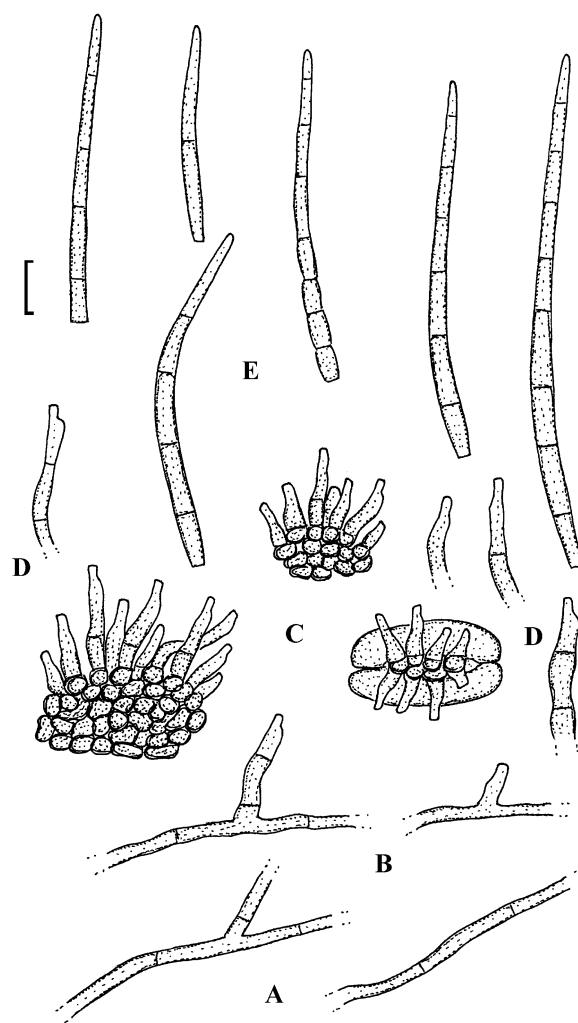


**Fig. 2:** *Pseudocercospora chibaensis* (based on HAL 2991 F), A – Solitary conidiophores arising from superficial hyphae, B – Conidiophore fascicles, C – Conidiophores, D – Conidia. Bar – 10  $\mu\text{m}$ . U. Braun del.

*Pseudocercospora elaeocarpicola*  
 Tak. Kobay., Nishij. & C. Nakash.,  
 Mycoscience **39**: 187, 1998.  
 Fig. 3

Material examined: On *Elaeocarpus chinensis* and *E. japonicus*, Sep. 2014, leg. L. Hönig (HAL 2986 F, 2994 F).

Notes: *P. elaeocarpicola* was described from Japan on *Elaeocarpus japonicus* (Kobayashi et al. 1998). The present collections on *Elaeocarpus* spp. are the first records from China, and *E. chinensis* represents a new host species for this leaf-spotting fungus. The two collections agree well with the original description of this species, except for the formation of superficial hyphae with solitary conidiophores found in the Chinese specimens on *E. japonicus*, which was not mentioned in Kobayashi et al. (1998). Kobayashi et al. (1998) distinguished *P. elaeocarpicola* from *P. elaeocarpi* B. Sutton & Sankaran (Sutton & Sankaran 1994), described from India on *Elaeocarpus* sp., by lacking leaf spots, mainly epiphyllous stromata and lacking formation of superficial mycelium. Superficial hyphae have been found in the new Chinese collections on *E. japonicus* and can thus be excluded as differentiating character between the two species, but *P. elaeocarpi* is in addition characterised by having obclavate-cylindrical conidia 3–5 µm wide. Therefore, the two *Pseudocercospora* species on *Elaeocarpus* spp. are maintained as separated taxa.



**Fig. 3:** *Pseudocercospora elaeocarpicola* (based on HAL 2994 F), A – Superficial hyphae, B – Solitary conidiophores arising from superficial hyphae, C – Conidiophore fascicles, D – Conidiophores, E – Conidia. Bar – 10 µm. U. Braun del.

The Chinese material is characterised as follows: Leaf spots amphigenous, subcircular to angular-irregular, 3–7 mm diam, dark brown, without or with broad diffuse halo, yellowish, brown to purplish violet (diameter including halo up to 10 mm). Caespituli amphigenous, punctiform on the upper leaf surface, scattered to dense, less conspicuous below, greyish to medium dark brown. Mycelium internal and external; superficial hyphae only on the lower leaf surface or amphigenous, sparingly developed to abundant, branched, septate, 1.5–3.5 µm wide, pale to medium olivaceous or olivaceous-brown, thin-walled, smooth, with or without solitary conidiophores. Stromata well-developed, above all on the upper leaf surface, substomatal to immersed, 10–80 µm diam., medium olivaceous-brown to medium dark brown, cells 2–7 µm diam., outline circular to somewhat irregular, wall slightly thickened. Conidiophores in small to moderately large fascicles, arising from stromata, through stomata or erumpent, loose to usually dense, or conidiophores solitary, arising from superficial hyphae, lateral, erect, straight, subcylindrical, somewhat conical to slightly geniculate-sinuuous, unbranched, 5–40 × 2–5 µm, 0–3-septate, subhyaline, pale to medium olivaceous-brown throughout or paler towards the tip, thin-walled, smooth; conidiogenous cells integrated, terminal or conidiophores reduced to conidiogenous cells, 10–25 µm long, conidiogenous loci inconspicuous or visible as truncate tips, unthickened, not darkened. Conidia solitary, obclavate-cylindrical, subacicular, long conidia sometimes filiform-cylindrical, straight to curved, 25–90 × (1.5–)2.5–4(–4.5) µm, 1–9-septate, pale olivaceous to olivaceous-brown, thin-walled, smooth, apex subacute or subobtuse, base short obconically truncate or truncate, 1.5–3 µm wide, hila unthickened, not darkened.

*Pseudocercospora fukuokaensis* (Chupp)  
X.J. Liu & Y.L. Guo, *Mycosystema* 5: 103,  
1992. Fig. 4

Material examined: On *Alniphyllum fortunei*, Sep. 2014, leg. L. Hönig (HAL 2988 F).

Notes: *P. fukuokaensis* is known from China, Japan and Korea on various *Styrax* spp. (Shin & Braun 1996, Guo & Hsieh 1995, Guo et al. 1998, Kobayashi 2007). *Alniphyllum* is a new host genus for this species. The morphology of the new Chinese collection on *Alniphyllum* coincides well with specimens on various *Styrax* spp. and is characterised as follows: Leaf spots amphigenous, to 5 mm diam., pale to medium brown, with a narrow darker marginal line. Caespituli epiphyllous, punctiform, greyish brown. Mycelium internal. Stromata well-developed, immersed, 15–35 µm diam., dark olivaceous-brown, composed of swollen hyphal cells, circular to slightly angular-irregular in outline, 2–6 µm diam. Conidiophores in moderately large and dense fascicles, arising from stromata, erumpent, erect, straight, subcylindrical-conical to slightly curved or geniculate-sinuous, 5–15 × 1.5–3.5 µm, 0(–1)-septate, pale olivaceous to olivaceous-brown throughout or paler towards the tip, sometimes even subhyaline, thin-walled, smooth; conidiophores usually reduced to conidiogenous cells, conidiogenous loci inconspicuous, often visible as truncate tip, but always unthickened and not darkened. Conidia solitary, narrowly obclavate, shorter conidia sometimes subfusiform, straight to curved, occasionally sigmoid, 30–70 × 2–3 µm, (2–)3–7(–8)-septate, pale olivaceous or olivaceous-brown, thin-walled, smooth, apex subacute or subobtuse, base obconically truncate, 1–2 µm wide, hila neither thickened nor darkened.

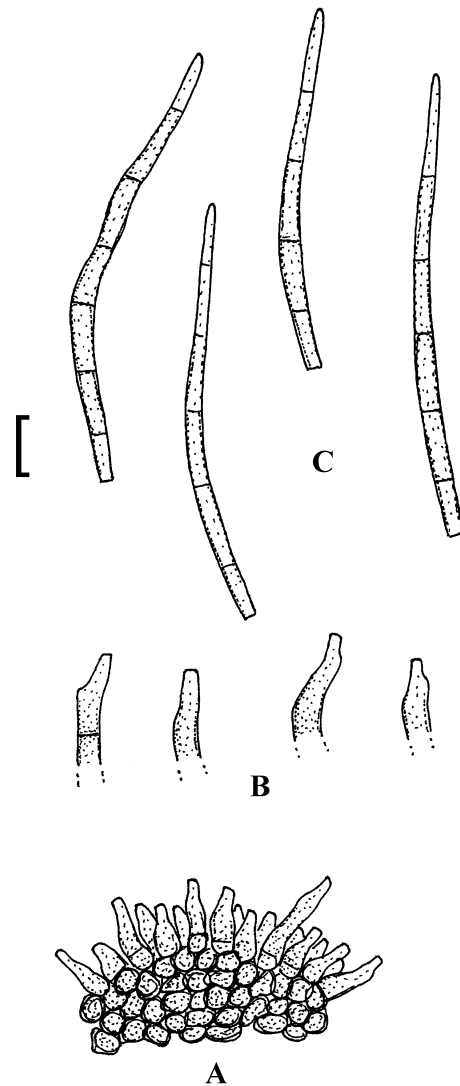


Fig. 4: *Pseudocercospora fukuokaensis* (based on 2988 F), A – Conidiophore fascicle, B – Conidiophores, C – Conidia. Bar – 10 µm. U. Braun del.

*Pseudocercospora sapindi-emarginati* (T.S. Ramakr. & K. Ramakr.) U. Braun, Bagyan. & Jagad., *Int. J. Mycol. Lichenol.* 4: 371, 1992. Fig. 5

Material examined: On *Koelreuteria bipinnata*, Sep. 2014, leg. L. Hönig (HAL 2685 F).

Notes: Guo & Hsieh (1995) and Guo et al. (1998) assigned a Chinese collection on *Koelreuteria paniculata* (*Sapindaceae*) to *Pseudocercospora sapindi-emarginati*, a species known from India on *Sapindus emarginatus*, *S. laurifolius*, and *S. trifoliatus* (Kamal 2010). Collections on *Koelreuteria* spp. are morphologically indistinguishable from specimens on *Sapindus* spp. The Chinese sample found on *K. bipinnata*, a new host for *P. sapindi-emarginati*, is characterised as follows: Leaf spots small, 1–3 mm diam., straw-coloured to brownish, with a narrow, slightly raised marginal line. Caespituli amphigenous, scattered, punctiform-pustulate, brown to greyish brown by abundant conidial formation. Hyphae internal. Stromata well-developed, 30–80 µm diam., immersed to somewhat erumpent, medium to dark brown or olivaceous-brown, composed of swollen hyphal cells, subcircular in outline, 2–8 µm diam., walls slightly thickened. Conidiophores numerous to very numerous, in dense sporodochial fascicles, arising from stromata, erumpent, straight to curved, subcylindrical-conical to somewhat geniculate-sinuous, unbranched, 5–30 × 3–5 µm, 0–1-septate, pale to medium olivaceous, olivaceous-brown in mass, thin-walled, smooth; conidiogenous cells integrated, terminal or conidiophores reduced to conidiogenous cells, 5–25 µm long, conidiogenous loci inconspicuous or visible as truncate tip, 1.5–2 µm wide, but always unthickened and not darkened. Conidia solitary, obclavate-cylindrical, occasionally filiform-subacicular, straight to curved, rarely sigmoid, 25–80 × 3–4 µm, 1–7-septate, pale olivaceous, thin-walled, smooth, apex obtuse to subacute, base short obconically truncate, occasionally truncate, (1–)1.5–2(–2.5) µm wide, hila unthickened, not darkened.

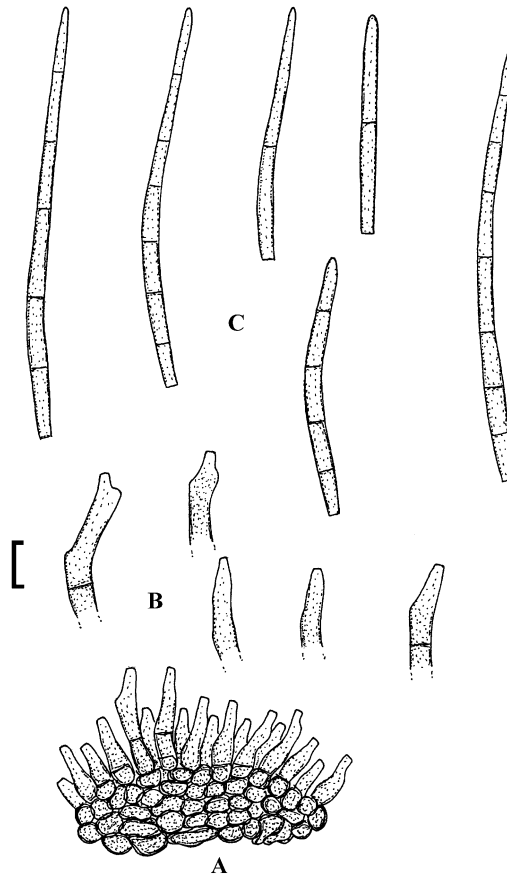
*Trochophora fasciculata* (Berk. & M.A. Curtis) Goos, Mycologia **78**: 759, 1986.

= *Curvidigitus daphniphylli* Sawada, Rep. Dept. Agric. Gov. Res. Inst. Formosa **86**: 176, 1943, nom. inval.

= *Trochophora simplex* (Petch) R.T. Moore, Mycologia **47**: 90, 1955.

Material examined: On *Daphniphyllum oldhamii*, Sep. 2014, leg. L. Hönig (HAL 2689 F).

Notes: This fungus is often referred to as *Trochophora simplex* although this name was already reduced to synonym with *T. fasciculata* by Goos (1986). *Curvidigitus daphniphylli*, described from Taiwan on *Daphniphyllum glaucescens* (Sawada 1943), has been reduced to synonymy with *T. simplex* (Ono & Kobayashi 2001). The phylogenetic position of this species within the *Mycosphaerellaceae* has recently been verified by Crous et al. (2013). *T. fasciculata* is known from Asia (China, including Hong Kong, India, Japan, Sri Lanka, South Korea, Taiwan) on *Daphniphyllum calycinum*, *D. glaucescens*, *D. macropodum*, *D. neilgherrense*, *D. oldhamii* (≡ *D. pentandrum* var. *oldhamii*), and *D. teismanii* (Anonymous 1979, Kobayashi 2007, Lu et al. 2000, Cho & Shin 2004, Ono & Kobayashi 2001, Patil & Sawant 1991). *D. oldhamii* has been recorded as host of *Curvidigitus daphniphylli* from Taiwan (Anonymous 1979). The present collection from the Chinese Jiangxi Province represents the first record on *D. oldhamii* from Mainland China.



**Fig. 5:** *Pseudocercospora sapindi-emarginati* (based on HAL 2689 F), A – Conidiophore fascicle, B – Conidiophores, C – Conidia. Bar – 10 µm. U. Braun del.

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