Saprobic dematiaceous hyphomycetes from Shennongjia region, China

by

Guozhu Zhao^{1,2*}, Xingzhong Liu², Xiangming Xie¹ and Aixin Cao³

¹College of Biological Sciences and Biotechnology, Beijing Forestry University, Beijing 100083, P.R. China

²Key Laboratory of Systematic Mycology & Lichenology, Institute of Microbiology, Chinese Academy of Sciences, Beijing 100101, P.R. China

³Research Center for Eco-Environmental Science, Chinese Academy of Sciences, Beijing 100085, P.R. China

With 2 figures and 2 table

Zhao, G.Z., X.Z. Liu, X.M. Xie & A.X. Cao (2009): Saprobi dematiaceous hyphomycetes from Shennongjia region, China. - Nova Hedwigia 88: 217-227.

Abstract: 31 dematiaceous hyphomycetes belonging to 18 genera are reported from Shennongjia region, China. Among them, 2 new species are described and illustrated. *Acrodictys oblonga* sp. nov. is characterized by percurrently proliferating conidiophores, lageniform to doliiform conidiogenous cells and ellipsoidal to oblong, muriform conidia. *Tetraploa opaca* sp. nov. is characterized by ovate or obpyriform conidia, usually composed of three columns of cells with long and hard setiform appendages. Six genera; *Bactrodesmium*, *Cordana*, *Cryptocoryneum*, *Matsushimaea*, *Phaeoisariopsis* and *Trichocladium*, and 12 species; *Acrodictys atroapicula*, *A. septosporioides*, *Bactrodesmium atrum*, *B. pallidum*, *Cheiromoniliophora gracilis* var. *hispanica*, *Cordana pauciseptata*, *Cryptocoryneum condensatum*, *Dictyosporium toruloides*, *D. triseriale*, *Matsushimaea fasciculata*, *Phaeoisariopsis pubescens* and *Trichocladium opacum*, are new records for China. The new taxa are described and illustrated, and compared with similar species.

Key words: *Acrodictys*, anamorphic fungi, taxonomy, *Tetraploa*.

Introduction

Shennongjia is one of the most famous mountains in China, located in northwest Hubei Province, between longitudes 109°56' and 110°58'E and latitudes 31°15' and 31°75'N. Shennongjia is well known as a unique piece of undisturbed subtropical forest ecosystem in the middle latitude areas of the world. It has a complex and

*Corresponding author, Email: zhaogz@im.ac.cn

unique geographic environment and vegetation, and is considered as one of the highest biodiversity regions in the world.

Dematiaceous hyphomycetes are anamorphic fungi having dark-colored hyphae and/or conidia. Most of them are important decomposers and usually inhabit a variety of plant tissues and debris in moist forest environment or waterside. As one of the major components of the biomass and biodiversity in nature, they are economic and ecological significant. Saprobiic dematiaceous hyphomycetes in Shennongjia region are scarcely known. The aim of the present study is to investigate the biodiversity of these fungi in Shennongjia region in order to obtain a helpful resource of them for further uses and studies.

During surveys of dematiaceous hyphomycetes in Shennongjia region in 2003, more than 100 specimens were collected and examined. A total of 31 species (including two new species) belonging to 18 genera are recorded and presented in this paper.

Materials and methods

Submerged wood, decaying leaves, twigs and other parts of plants were collected from Shennongjia region. Samples were separately placed into plastic or paper bags, taken to laboratory, and stored in a refrigerator at 4°C before microscopic study, or incubated in moist containers (plastic bags or boxes) at room temperature to induce sporulation. Humidity was maintained by adding moistened paper towels. The incubated samples were examined microscopically for the presence of microfungi after 4-5 days and periodically for up to one month. Cultures of fungi were obtained from single spore isolation. Herbarium specimens and living cultures were deposited in HMAS (Herbarium of Mycology, Chinese Academy of Sciences).

Taxonomy

1. *Acrodictys atroapicula* C.J.K.Wang & B.Sutton, Mycologia 74: 492, 1982.

On rotten wood, Caiqi, HMAS 90413 (= ZGZII₀₃077, the collection number).

2. *Acrodictys septosporioides* Matsush., Matsush. Mycol. Mem. 3: 2, 1983.

On decaying branches of unidentified tree, Caiqi, HMAS 90427 (= ZGZII₀₃076-1).

3. *Acrodictys oblonga* G.Z.Zhao, sp. nov.

Fig. 1

Coloniae effusae, pilosae, brunneae vel fuscae. Mycelium partim superficiale et partim immersum, ex hyphis ramosis, septatis, hyalinis vel subhyalinis, laevibus, 1-3 µm crassis, reticulatis compositum. Conidiophora macronemata, mononemata, ex hyphis superficiali oriunda, singularia vel 2 vel 3 disposita, recta vel flexuosa, laevia, parietibus crassis, septata, usque ad 100µm longa, basim versus atro brunnea, 5.5 µm crassa, apicem versus pallidiora, 2-3.5 µm crassa, indeterminata, plerumque ad proliferationes percurrentes successivas. Cellulae conidiogenae in conidiophoris incorporatae, terminales, monoblasticae, pallide brunneae, lageniformes vel doliiformes. Conidiorum secessio schizolytica. Conidia holoblastica, solitaria, sicca, acrogena, olivaceo-brunnea vel atro-brunnea, ovata, ellipsoidea vel oblonga, muriformia, plerumque 5-transverse septata et aliquot longitudinaliter et oblique septata, ad septis constricta, brunnea vel atrobunnea, laevia, 27-32 × 12-16 µm; cellula basali conica vel cuneiformi, subhyalina vel pallide brunnea, protuberantes, 4-5.5 × 3-4.5 µm, ad basin truncata.

Fig. 1: Conidiophores, conidiogenous cells and conidia of *Acrodictys oblonga* on natural substrate. A, Conidiophores and detached conidia with protuberant, conical basal cell. B-C, Conidiophores, conidiogenous cells and conidia. Arrows show lageniform to doliiiform conidiogenous cells. Bars = 15 μ m.

Colonies effuse, hairy, scattered, olivaceous brown to blackish brown. Mycelium partly superficial, partly immersed, composed of branched, septate, subhyaline to pale brown, smooth, 1-3 μm wide hyphae. Conidiophores macronematous, mononematous singly or in group of two or three, erect or ascending, straight or flexuous, smooth, thick-walled, septate, up to 100 μm long, dark brown at the base, 5.5 μm wide, becoming taper and paler towards the apex, 2-3.5 μm wide, indeterminate, with one or more successive, terminal, percurrent proliferations. Conidiogenous cells integrated, terminal, monoblastic, pale brown, cylindrical, lageniform to doliiform. Conidial secession schizolytic. Conidia holoblastic, solitary, dry, acrogenous, ovate, ellipsoidal to oblong, muriform, usually with 5 transverse septa and a few longitudinal and oblique septa, constricted at the septa, brown to blackish brown, smooth, $27\text{--}32 \times 12\text{--}16 \mu\text{m}$ ($\bar{x} = 28 \times 14 \mu\text{m}$, $n = 30$; exclude the basal protruding cells); basal cell persistent, protuberant, subhyaline to pale brown, conical or cuneiform, truncate at base, $4\text{--}5.5 \times 3\text{--}4.5 \mu\text{m}$.

HABITAT: on rotten petiole of banana tree, Guanmenshan, Shennongjia, Hubei Province, 16 Sep. 2003, coll. Guozhu Zhao, HMAS 90286 (= ZGZII₀₃ 113), Holotype.

Acrodictys M.B.Ellis was originally erected by Ellis (1961) with *A. bambusicola* as the type species, and was mainly characterized by percurrently proliferating conidiophores and muriform conidia. Subsequently, more than 30 species have been referred to the genus. Baker et al. (2002a, b) and Baker & Morgan-Jones (2003) refined the generic concept of *Acrodictys* in a stricter sense as 'conidiophore commonly indeterminate and proliferating percurrently, successive terminal proliferations lageniform to doliiform, conidia muriform, usually with vertical-longitudinal septa in the middle cells and several parallel-transverse septa'. They established three other genera i.e. *Rhexoacrodictys*, *Junewangia* and *Pseudoacrodictys* to accommodate *Acrodictys* species, based on conidial morphology, conidiogenesis and conidial secession style. As a result, three species were retained in the refined *Acrodictys sensu stricto*. Other five species were placed in *Junewangia* as characterized by successive percurrent proliferations of conidiophores, narrowly cuneate conidiogenous cells and seceding schizolytically conidia. Four taxa were assigned to *Rhexoacrodictys*, characterized by rhexolytic disarticulation detachment conidia, and seven species were transferred to *Pseudoacrodictys* with large, somewhat irregularly shaped, numerous-celled conidia. Several questionable *Acrodictys sensu lato* species remained out of the four *Acrodictys*-related genera.

A. oblonga is similar to *Acrodictys micheliae* Kodsueb & McKenzie (Kodsueb et al., 2006), *A. peruamazonensis* Matsush. (Matsushima, 1993) and *A. septosporioides* Matsush. (Matsushima, 1983) in conidial morphology. Baker et al. (2002a) considered the two latter species better placed in *Junewangia* based on their conidiophores morphology and conidiogenesis. In our opinion, *A. peruamazonensis* is better placed in *Acrodictys* due to the presence of lageniform to doliiform proliferating conidiogenous cells and *A. septosporioides* should be placed in *Junewangia* based on the percurrent proliferations of conidiophores and its narrowly cuneate conidiogenous cells. However, a decision remains pending until their type specimens are examined. *A. micheliae* is distinct from *A. oblonga* by its larger conidia ($55\text{--}65 \times 14.5\text{--}25.5 \mu\text{m}$) with 9-11 transverse septa. *A. peruamazonensis* differs from *A. oblonga* by its broader conidia ($28\text{--}36 \times 17\text{--}21 \mu\text{m}$) with more irregularly longitudinal and oblique septa. *A. septo-*

Table 1. Synopsis of *Acrodictys oblonga* and similar species.

Species (Reference)	Conidiophores (μm)	Conidium morphology		Number of transverse septa	Number of longitudinal septa
		Size (μm)	Shape		
<i>A. bambusicola</i> (Ellis, 1961)	60-280	17-36 $\times$ 12-18	broadly clavate or pyriform	2-5	numerous
<i>A. micheliae</i> (Kodsueb et al., 2006)	5.5-6.5 $\times$ 90	(33-)55-65(-83) $\times$ (-14.5)-16.5(-25.5)	cylindric- ovoid	9-11	25-30
<i>A. oblonga</i> (this paper)	5.5 $\times$ 100	27-32 $\times$ 12-16	ovate, ellipsoidal to oblong	5	numerous
<i>A. peruamazonensis</i> (Matsushima, 1993)	4-6 $\times$ 50-100	28-36 $\times$ 17-21	ellipsoidal	5-6	numerous
<i>A. septosporioides</i> (Matsushima, 1983)	6-9 $\times$ 50-100	64-105 $\times$ 24-40	cylindric- ellipsoid	10-11	numerous

sporioides can be distinguished from *A. oblonga* by its narrowly cuneate conidiogenous cells and larger conidia (64-105 $\times$ 24-40 μm) with 8-11 transverse septa. A synopsis of characters of *A. oblonga*, *A. bambusicola* and three other species with similar conidia is given in Table 1.

4. *Bactrodesmium atrum* M.B.Ellis, Mycol. Pap. 72: 9, 1959.

On rotten branches of unidentified tree, Hongping, HMAS 90434 (= ZGZII₀₃097); rotten wood, Hongping, HMAS 90309 (= ZGZII₀₃127-2).

5. *Bactrodesmium pallidum* M.B.Ellis, Mycol. Pap. 72: 11, 1959.

On decaying branches of unidentified tree, Caiqi, HMAS 90396 (= ZGZII₀₃059).

6. *Berkleasium inflatum* Hol.-Jech., Česká Mykol. 41: 29, 1987.

On decaying branches of unidentified tree, Caiqi, HMAS 90395 (= ZGZII₀₃058-1).

7. *Cheiromoniliophora elegans* Tzean & J.L.Chen, Mycol. Res. 94: 424, 1990.

On decaying branches of unidentified tree, Shennongjia, HMAS 90388 (= ZGZII₀₃051).

8. *Cheiromoniliophora gracilis* var. *hispanica* R.F.Castañeda & Guarro, Mycotaxon 65: 122, 1997.

On rotten wood, Hongping, HMAS 90310 (= ZGZII₀₃128-3).

9. *Cordana pauciseptata* Preuss, Linnaea 24: 129, 1851.

On withered twigs, Caiqi, HMAS 90393 (= ZGZII₀₃056).

Table 1. Synopsis of *Acrodictys oblonga* and similar species.

Species (Reference)	Conidiophores (μm)	Conidium morphology		Number of transverse septa	Number of longitudinal septa
		Size (μm)	Shape		
<i>A. bambusicola</i> (Ellis, 1961)	60-280	17-36 $\times$ 12-18	broadly clavate or pyriform	2-5	numerous
<i>A. micheliae</i> (Kodsueb et al., 2006)	5.5-6.5 $\times$ 90	(33-)55-65(-83) $\times$ (-14.5)-16.5(-25.5)	cylindric- ovoid	9-11	25-30
<i>A. oblonga</i> (this paper)	5.5 $\times$ 100	27-32 $\times$ 12-16	ovate, ellipsoidal to oblong	5	numerous
<i>A. peruamazonensis</i> (Matsushima, 1993)	4-6 $\times$ 50-100	28-36 $\times$ 17-21	ellipsoidal	5-6	numerous
<i>A. septosporioides</i> (Matsushima, 1983)	6-9 $\times$ 50-100	64-105 $\times$ 24-40	cylindric- ellipsoid	10-11	numerous

sporioides can be distinguished from *A. oblonga* by its narrowly cuneate conidiogenous cells and larger conidia (64-105 $\times$ 24-40 μm) with 8-11 transverse septa. A synopsis of characters of *A. oblonga*, *A. bambusicola* and three other species with similar conidia is given in Table 1.

4. *Bactrodesmium atrum* M.B.Ellis, Mycol. Pap. 72: 9, 1959.

On rotten branches of unidentified tree, Hongping, HMAS 90434 (= ZGZII₀₃097); rotten wood, Hongping, HMAS 90309 (= ZGZII₀₃127-2).

5. *Bactrodesmium pallidum* M.B.Ellis, Mycol. Pap. 72: 11, 1959.

On decaying branches of unidentified tree, Caiqi, HMAS 90396 (= ZGZII₀₃059).

6. *Berkleasium inflatum* Hol.-Jech., Česká Mykol. 41: 29, 1987.

On decaying branches of unidentified tree, Caiqi, HMAS 90395 (= ZGZII₀₃058-1).

7. *Cheiromoniliophora elegans* Tzean & J.L.Chen, Mycol. Res. 94: 424, 1990.

On decaying branches of unidentified tree, Shennongjia, HMAS 90388 (= ZGZII₀₃051).

8. *Cheiromoniliophora gracilis* var. *hispanica* R.F.Castañeda & Guarro, Mycotaxon 65: 122, 1997.

On rotten wood, Hongping, HMAS 90310 (= ZGZII₀₃128-3).

9. *Cordana pauciseptata* Preuss, Linnaea 24: 129, 1851.

On withered twigs, Caiqi, HMAS 90393 (= ZGZII₀₃056).

10. *Cryptocoryneum condensatum* (Wallr.) E.W.Mason & S.Hughes, in Walsh & Rimington, Nat. Hist. Scarborough Distr. 1: 161, 1953.

On decaying branches of unidentified tree, Shennongjia, HMAS 90398 (= ZGZII₀₃061); Jiuhuping, HMAS 90407 (= ZGZII₀₃070); Caiqi, HMAS 90427 (= ZGZII₀₃076-3).

11. *Dictyosporium toruloides* (Corda) Guég., Bull. Soc. Mycol. Fr. 21: 101, 1905.

On decaying branches of unidentified tree, Shenhouchi, HMAS 90304 (= ZGZII₀₃121-1); Guanmenshan, HMAS 90287 (= ZGZII₀₃114).

12. *Dictyosporium triseriale* Matsush., Matsush. Mycol. Mem. 1: 32, 1980.

On dead branches of unidentified tree, Honghuaping, HMAS 90425 (= ZGZII₀₃090).

13. *Helicofilia irregularis* (P.M.Kirk) G.Z.Zhao, Xing Z.Liu & W.P.Wu, Fungal Diversity 26: 432, 2007.

On rotten branches of unidentified tree, Guanmenshan, HMAS 90284 (= ZGZII₀₃112).

14. *Helicoma viridis* (Corda) S.Hughes, Can. J. Bot. 36: 772, 1958.

On split of dead branches of unidentified tree, Caiqi, HMAS90430 (= ZGZII₀₃092).

15. *Helicoma fumosum* (P.Karst.) G.Z.Zhao, Xing Z.Liu & W.P.Wu, Fungal Diversity 26: 396, 2007.

On rotten branches of unidentified tree, Hongping, HMAS 90283 (= ZGZII₀₃110).

16. *Helicoma monilipes* Ellis & L.N.Johnson, Proc. Acad. Nat. Sci. Philad.: 376, 1894.

On decaying wood of unidentified tree, Caiqi, HMAS 90397 (= ZGZII₀₃060); decaying branches, Hongping, HMAS 90308 (= ZGZII₀₃126).

17. *Helicoma perelegans* Thaxt. ex Linder, Ann. Mo. Bot. Gdn.16: 303, 1929.

On decaying branches of unidentified tree, Honghuaping, HMAS 90299 (= ZGZII₀₃119-1).

18. *Helicoma pulchrum* R.F.Castañeda & Guarro, in Castañeda-Ruiz, Kendrick, Guarro & Mayayo, Mycol. Res. 102: 58, 1998.

On decaying branches of unidentified tree, Hongping, HMAS 90307(= ZGZII₀₃125).

19. *Helicosporium griseum* Berk. & M.A.Curtis, Grevillea 3: 51, 1874.

On rotten branches of unidentified tree, Hongping, HMAS 90435 (= ZGZII₀₃098-2), HMAS 90436 (= ZGZII₀₃099); Honghuaping, HMAS 90301 (= ZGZII₀₃117), HMAS 90300 (= ZGZII₀₃118); Shenhouchi, HMAS 90289 (= ZGZII₀₃120-1).

20. *Helicosporium lumbricopsis* Linder, Ann. Mo. Bot. Gdn. 16: 284, 1929.

On decaying branches of unidentified tree, Honghuaping, HMAS 90299 (= ZGZII₀₃119-2).

21. *Matsushimaea fasciculata* (Matsush.) Subram., Kavaka 5: 96, 1977.

On decaying wood of unidentified tree, Honghuaping, HMAS 90401 (= ZGZII₀₃064).

22. *Monodictys cerebriformis* G.Z.Zhao & T.Y.Zhang, Mycosystema 23: 325, 2004.

On decaying barks of unidentified tree, Honghuaping, HMAS 90402 (= ZGZII₀₃065); Caiqi, HMAS 90429 (= ZGZII₀₃091).

23. *Monodictys putredinis* (Wallr.) S.Hughes, Can. J. Bot. 36: 785, 1958.

On dead branches of unidentified tree, Caiqi, HMAS 90431 (= ZGZII₀₃093).

24. *Phaeoisariopsis pubescens* (Cooke & Ellis) M.B.Ellis, More Dematiaceous Hyphomycetes: 234, 1976

On decaying branches of unidentified tree, Jiuhuping, HMAS90408 (= ZGZII₀₃071).

25. *Phragmocephala atra* var. *atra* (Berk. & Broome) E.W.Mason & S.Hughes, Naturalist 838: 97, 1951.

= *Endophragmia atra* (Berk. & Broome) M.B.Ellis, Mycol. Pap. 72: 22, 1959.

On dead branches of unidentified tree, Honghuaping, HMAS 90390 (= ZGZII₀₃053).

26. *Phragmocephala prolifera* (Sacc., M.Rousseau & E.Bommer) S.Hughes, N.Z. Jl. Bot. 17: 164, 1979.

On decaying branches of unidentified tree, Jiuhuping, HMAS 90404 (= ZGZII₀₃067).

27. *Spirosphaera floriformis* Beverw. [as '*floriforme*'], Trans. Br. Mycol. Soc. 36: 121, 1953.

On decaying branches of unidentified tree, Jiuhuping, HMAS 90406 (= ZGZII₀₃069).

28. *Tetraploa opaca* G.Z.Zhao, **sp. nov.**

Fig. 2

Coloniae effusae, velutinosae, atrobrunneae vel fuscae. Mycelium superficiale, ex hyphis septatis, irregulariter ramosis, anastomosis, flexuosis, laevibus, pallide brunneis vel brunneis, 1-2 µm crassis compositum. Conidiophora micronematica. Cellulae conidiogenae monoblasticae, integratae, determinatae, intercalares, cylindricae, pallide brunneae, laeves. Conidia immediate in mycelio formata, solitaria, pleurogena; corpus conidiorum atrobrunneum vel fuscum, ovatum vel obpyriformium, 55-80 µm longa, ad basin 25-40 µm crassum, apice 10-12 µm crassum, e columnis 3-4 arcte cohaerentibus, e cellulis 5-8 formantis compositum; columnae apice appendicibus singulis setiformibus, 3-5 septatis, levibus, ad basin 4-7 µm, apice 2.5-3.5 µm crassis, 40-100 µm longis, ad basin brunneis, supra pallide brunneis armatae.

Colonies effused, velvety, dark brown to blackish brown. Mycelium superficial, composed of pale brown to brown, smooth-walled, flexuous, septate, irregularly

Fig. 2: Hyphae, conidiogenous cells and conidia of *Tetraploa opaca* on natural substrate (from holotype). A-B, Conidia, arrows show detached conidium with the short cylindrical conidiogenous cells. C, Conidium with diverging cells of column. D-F, normal mature conidia. Bars = 25 μ m.

branched and anastomosing 1-2 μm wide hyphae. Conidiophores micronematous, hardly distinguishable from the mycelium. Conidiogenous cells monoblastic, integrated, determinate, intercalary, short cylindrical, pale brown, smooth. Conidia formed directly on the mycelium, solitary, pleurogenous; conidial body dark brown to blackish brown, ovate to obpyriform, rough-walled, 55-80 μm long, 25-40 μm wide at the base ($\bar{x}$ = 68 $\times$ 30 μm , n = 30), 10-12 μm wide at the apex ($\bar{x}$ = 11.5 μm , n = 30), indistinctly composed of 3-4 columns, mostly with 5-8 cells in each column; the columns tend to develop closely (occasionally diverge each other), diverging apically and topped with hard setiform appendages in each column. Setose appendages almost pale brown except their brown base, smooth, 40-100 μm long, 4-7 μm thick at the base, 2.5-3.5 μm at the apex, number of septa 3-5.

HABITAT: on decaying branches of unidentified tree, Shenhouxi, Shennongjia, Hubei Province, 15 Sep. 2003, coll. Guozhu Zhao, HMAS 90304 (= ZGZII₀₃121-2), Holotype.

ADDITIONAL SPECIMEN EXAMINED: on dead culms of bamboo, Linzhi, altitude 3100m, Tibet, 13 July 2004, coll. Guozhu Zhao, HMAS 98823(= ZGZII₀₄109).

The genus *Tetraploa* was erected by Berkley & Broome in 1850 (Ellis, 1949) with *T. aristata* as the type species. It was characterized by the muriform conidia consisting of three or four closely appressed columns of cells; the columns widely diverged from one another apically, usually with an appendage on apical cell of each column. Eleven taxa have been previously accepted in the genus (Ellis, 1949; Sharma, 1978; Arambarri et al., 1987; Rifai et al., 1988; Révay, 1993; Matsushima, 1996; Hatakeyama et al., 2005). Among them, *T. opaca* is similar to *T. aristata*, *T. setifera* Révay (1993) and *T. curviappendiculata* Sat. Hatak., Kaz., Tanaka & Y. Harada (2005). However, the conidial body in *T. aristata* is obovate or ellipsoidal, composed of distinct four columns of cells, and has been mainly recorded on leaf bases and stems of herbaceous plants (Ellis, 1971). *T. setifera* is distinguished from *T. opaca* by its smooth conidia with soft, hyaline setiform appendages and *T. curviappendiculata* differs from *T. opaca* by its narrowly obpyriform conidium body (15-22 μm), shorter (9-18 μm) and curved appendages. Hatakeyama et al. (2005) examined the type specimen of *T. biformis*, and several collected specimens, and synonymized it with *T. javanica* Rifai, Zainuddin & Cholil. *T. javanica* has also some resemblance with *T. opaca*, but differs in its conidia with two long and two short appendages. A synopsis of characters of *T. opaca* and four other species with similar conidia is given in Table 2.

29. *Trichocladium opacum* (Corda) S. Hughes, Trans. Br. Mycol. Soc. 35: 154, 1952.

On decaying branches of unidentified tree, Honghuaping, HMAS 90392 (= ZGZII₀₃055); rotten wood, Jiuhuping, HMAS 90409 (= ZGZII₀₃072).

30. *Xenosporium latissporum* G.Z. Zhao, Xing Z. Liu & W.P. Wu, Fungal Diversity 26: 468, 2007.

On decaying branches of unidentified tree, Caiqi, HMAS 90394 (= ZGZII₀₃057), HMAS 90395 (= ZGZII₀₃058-2); Guanmenshan, HMAS 90305(= ZGZII₀₃123).

Table 2. Synopsis of *Tetraploa opaca* and similar species.

Species (Reference)	Size (µm)	Shape	Conidium morphology		Length of appendages (µm)/characters
			Number of columns	Number of cells in each column	
<i>T. aristata</i> ¹ (Ellis, 1949)	25-39(-31.8) × 14-29(-20.6)	undescribed	4	3-6	12-80
<i>T. curviappendiculata</i> (Hatakeyama et al., 2005)	52-67(-75) × 15-22	obclavate to obpyriform	4-5	9-12	9-18(-22); curved below
<i>T. javanica</i> (Rifai et al., 1988)	30-42(-58) × 17-28	ovoid	4, rarely up to 6	4-7	up to 215 (two long); 9-25 (two short), recurved
<i>T. opaca</i> (this paper)	55-80 × 25-40	ovate to obpyriform	3-4	5-8	40-100
<i>T. setifera</i> (Révay, 1993)	16-24 × 12-14	undescribed	4	4-5	46-120

¹Data from 'a' type of conidia (Ellis, 1949)

31. *Xenosporium ovatum* G.Z.Zhao, Xing Z.Liu & W.P.Wu, Fungal Diversity 26: 473, 2007.

On rotten branches of unidentified tree, Hongping, HMAS 90435 (= ZGZII₀₃ 098-1).

Acknowledgements

We are indebted to Dr. J.Y.Zhuang, Institute of Microbiology, Chinese Academy of Sciences, for correcting the Latin name of the two new species. Thanks are also due to Dr. G.Delgado, Environmental Microbiology Laboratory, USA, and two anonymous reviewers for their invaluable suggestions and kindly reviewing the paper. This project was supported by National Natural Science Foundation of China (No. 30700647).

References

- ARAMBARRI, A., M. CABELLO & A. MENGASCINI (1987): New hyphomycetes from Santiago river. II. (Buenos Aires Province, Argentina). - *Mycotaxon* **30**: 263-267.
- BAKER, W.A., C. PARTRIDGE & G. MORGAN-JONES (2002a): Notes on hyphomycetes LXXXV. *Junewangia*, a genus in which to classify four *Acrodictys* species and a new taxon. - *Mycotaxon* **81**: 293-319.
- BAKER, W.A., C. PARTRIDGE & G. MORGAN-JONES (2002b): Notes on hyphomycetes LXXXVII. *Rhexoacrodictys*, a new segregate genus to accommodate four species previously classified in *Acrodictys*. - *Mycotaxon* **82**: 95-113.
- BAKER, W.A. & G. MORGAN-JONES (2003): Notes on hyphomycetes. XCI. *Pseudoacrodictys*, a novel genus for seven taxa formerly placed in *Acrodictys*. - *Mycotaxon* **85**: 371-391.

- ELLIS, M.B. (1949): *Tetraploa*. - Trans. Brit. Mycol. Soc. **32**: 246-257.
- ELLIS, M.B. (1961): Dematiaceous Hyphomycetes II. Mycol. Pap. **79**: 1-23.
- ELLIS, M.B. (1971): Dematiaceous Hyphomycetes. Commonwealth Mycological Institute, Kew, Surrey, England, 608 pp.
- HATAKEYAMA, S., K. TANAKA & Y. HARADA (2005): Bambusicolous fungi in Japan (5): three species of *Tetraploa*. - Mycoscience **46**: 196-200.
- KODSUEB, R., S. LUMYONG, K.D. HYDE, P. LUMYONG & E.H.C. MCKENZIE (2006): *Acrodictys micheliae* and *Dictyosporium manglietiae*, two new anamorphic fungi from woody litter of Magnoliaceae in northern Thailand. Cryptogamie, Mycologie **27**: 111-119.
- MATSUSHIMA, T. (1983): Matsushima Mycological Memoirs **3**: 1-90.
- MATSUSHIMA, T. (1993): Matsushima Mycological Memoirs **7**: 1-75.
- MATSUSHIMA, T. (1996): Matsushima Mycological Memoirs **9**: 1-38.
- RÉVAY, A. (1993): Some new or interesting hyphomycetes from Hungary. - Nova Hedwigia **56**: 473-482.
- RIFAI, M.A., H. ZAINUDDIN & A. CHOLIL (1988): The Japanese species of *Tetraploa*. - Reinwardtia **10**: 419-423.
- SHARMA, N.D. (1978): Some additions to fungi of India-IV. - J. Indian Bot. Soc. **57**: 102-105.

Received 21 January 2008, accepted in revised form 25 April 2008.