菌 物 系 统 20（2）：159~162，2001
Mycosystema

PROTODAEDALEA IMAZ., A NEW RECORD OF CHINA*

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ABSTRACT: *Protodaedalea* Imaz. was recorded from China for the first time based on five specimens from Yunnan, China. Its taxonomic position was discussed. It is very close to the genus *Elmerina* Bres. and the placement of the genus in the family Aporpiaceae is proposed. It is an endemic genus of East Asia.

KEY WORDS: *Protodaedalea*, *P. hispida*, new record, China, taxonomic position

Protodaedalea Imaz., a monotypic genus, was published in 1955 based on the type species *P. hispida* Imaz.. The genus is distinctive. Its habitat on wood and the lenzitoid, daedaloid to nearly poroid hymenophore are reminiscent of some genera in Polyporaceae, such as *Daedalea*, *Lenzites* and so on, but its basidia reveal the close relationship with the tremellaceous group (Imazeki, 1955). It was only reported from Japan before. The following description and discussion are based on the five specimens collected from Yunnan, China.

***Protodaedalea* Imaz.** in Ann. Mycol. 20: 158-166, 1955

***Protodaedalea hispida* Imaz.** in Ann. Mycol. 20: 158-166, 1955　Fig. 1

Basidiocarps annual, tough fleshy, gelatinous, drying tough and rigid, flabelliform, up to 9cm wide and 7cm broad, margin often notched, broadly attached to the substratum or with an abruptly narrow base, the attachment thickening to 3cm, in vertical section the basidiocarps either wedge-shaped or even. Upper surface dull whitish, light ochraceous to yellowish brown, margin dull whitish and often with some pinkish tint, radially rugose and ridged, covered with dense soft hairs, hairs up to 0.5~3mm long, 0.1~0.2mm thick, some branched and connected, drying erect and rigid, spur-like. Context concolorous, 2~7mm thick, sometimes zoned. Hymenophore lamellate, daedaloid, rarely completely poroid, dull whitish, sometimes with some pinkish tint, lamellae up to 1.3cm broad, often separate near edge and united at base, surface strigose with hyphal pegs or nearly smooth (especially when immature), pores slightly elongate and irregular, 2~5mm long, 1.5~3mm broad, 3~7mm deep, the walls to 2mm thick, mouth of pores densely strigose.

Hyphal system dimitic. Hairs of pileus surface composed of fascicles of slightly thick-walled hyphae, septa rare, clamps lacking, 4~5μm in diameter. Contextual hyphae 4~6μm thick, slightly thick-walled, septa present, clamps lacking. Trama composed of closely arranged thick-walled skeletal hyphae, 3~6μm in diameter, the wall 0.5~1.5μm thick, rarely branched, clampless, parallel. Hymenium and subhymenium up to about 80μm thick, subhymenium composed of thin-walled generative hyphae, 2~4μm in diameter, zigzag, slightly divergent, clamps numerous, hymenium consisting of compactly packed basidia and filiform paraphyses intermixed with them. Probasidia clavate, upper portion cruciate-septate, basidia sphaeropedunculate, 40~50μm long (including the stalk), 10~13μm broad, the stalk 20~25μm long, remaining robust when mature, epibasidia round and blunt when not fully mature, turning acute with age, 14~16μm long, 5~6μm broad at base, occasionally with septa at the base of the

* Supported by National Natural Science Foundation (国家自然科学基金资助项目 No. 30070004) and the Taxonomy & Flora Special Foundation, Academia Sinica (中国科学院分类和区系特别基金 No. 9926)
收原稿日期：2000-06-12，收修改稿日期：2000-10-20

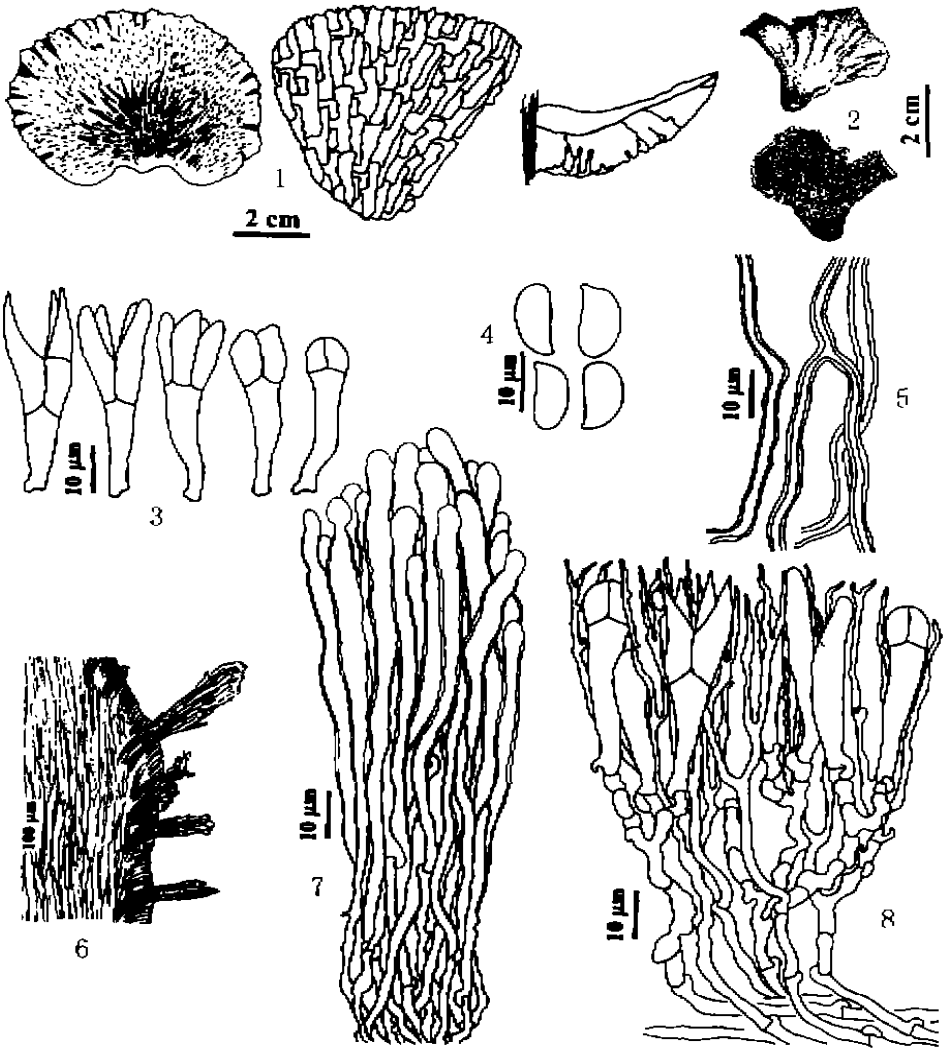

Fig. 1 *Protodaedalea hispida* Imaz.

HKAS 36704: 1. Basidiocarp (with daedaloid hymenophore); HKAS 35930: 2. Basidiocarp (with poroid hymenophore); 3. Basidia; 4. Basidiospores; 5. Skeletal hyphae of trama; 6,7. Hyphal pegs; 8. Hymenium and Subhymenium

epibasidia. Paraphyses numerous in the hymenium, filiform, bi-branched several times, 1.5~2.5μm in diameter, base with clamps. No typical cystidia seen. Basidiospores elliptical, 5~7(8)×9~12μm, hyaline, smooth, slightly concave on the adaxial surface. Striking hyphal pegs numerous or rare, arising deeply from the trama and extending beyond the hymenium 100~250(300)μm, pallid yellowish brown, composed of thick-walled parallel hyphae, not branched, base with septa, clamped, 2~3μm thick at base, the middle part and apex 5~6μm in diameter, the tips often swollen and becoming thin-walled, not fully mature hyphal pegs composed of broad thin-walled hyphae, hyphae often swollen to globose at the middle part.

Habitat On rotten wood

Specimens Examined Yunnan: M. Zang 2196 (HKAS 2196), 14. X. 1974, Mangun, Menghai, Xishuangbanna;

X. H. Wang 560 (HKAS 33000), 31. VII. 1998, Xujiaba, Jingdong; X. H. Wang 537 (HKAS 35930), 31. VII. 1998, Xujiaba, Jingdong; X. H. Wang 1046 (HKAS 36703), 1. VIII. 2000, Nankang, Tengchong; X. H. Wang 1063 (HKAS 36704), 2. VIII. 2000, Nankang, Tengchong.

DISCUSSION

Hymenophore of the specimens examined can be divided into two groups: one is lamellate to daedaloid (HKAS 33000, 36704) and the other is completely poroid (HKAS 2196, 35930, 36703). According to Imazeki (1955) and Bandoni *et al.* (1982), the hymenophore of *P. hispida* is poroid, daedaloid to almost entirely lamellate, predominantly lamellate. Two specimens from Japan (Herbarium of Tottori Mycological Institute (TMI) 22551 and 11914) were examined. The hymenophore of the two specimens is predominantly lamellate. The same case was also indicated by Imazeki *et al.* (1988) and Hongo & Izawa (1994). It is proposed here that lamellate and daedaloid hymenophore are much common than the poroid one in this species.

Compared with the variation of configuration, microscopic characters are much more identical between Yunnan specimens and between the specimens from Yunnan and Japan. The noticeable bifurcate paraphyses were found to be numerous in the hymenium of the specimens examined both from Yunnan and Japan. However they had never described and illustrated before. Gloeocystidia, an element found in this species before (Bandoni *et al.*, 1982), are absent from our specimens and the Japanese specimens examined. Instead of them, there are only some hyaline cystidia-like elements intermixed with the basidia and they originate from the same level as the basidia (Fig.I-8).

Basidia are a distinctive diagnosis of the genus. The basidia have robust stalks remaining so and hence the basidia remain clavate even in age. Such basidia are similar to those of *Tremellodendropsis transpusio* Crawf. and '*Pterula pusio*' both illustrated by Oberwinkler (1972) and described by Corner (1966), but fructifications of the latter two are clavarioid. Another remarkable phenomenon that is worth mentioning is the rare transverse septa at the base of epibasidia, which was illustrated in Fig.I-3 and also by Imazeki & Hongo (1965). No doubt such structure is distinctive, but it should be regarded as of slight taxonomic value, because 'the basidia in the Heterobasidiomycetes as a whole as in individual species of the group are much more variable than in the Homobasidiomycetes (Martin, 1945).

Hyphal pegs are another distinctive character of this genus. In the specimens with poroid hymenophore examined hyphal pegs are also found at the mouth of pores. They are numerous and striking in some of the Yunnan specimens while rather rare in the others and Japanese specimens examined. According to the comparison between fruiting bodies at different phases, the number of this structure increases with the age of fruiting bodies. Apices of the pegs often become thin-walled (Fig.I-7). Such kind of hyphal pegs were also described in the genus *Elmerina* Bres. (Reid, 1992). Hyphal pegs have also been found in several other poroid tremellaceous genus besides this one, namely, *Protomerulius* A. Møller, *Aporpium* Bondartsev & Sing. and *Elmerina*. In fact the four poroid genera are so close and similar to each other that *Aporpium* had been treated as a synonym of *Elmerina* (Reid, 1992) and *Protomerulius* was suspected to be the same with *Aporpium* (Bandoni *et al.*, 1982). The noticeable basidiocarps, basidia and the hyphal pegs suggest that the genus *Protodaedalea* appears to be closely related to *Elmerina*. *Elmerina* is a tropical genus. It was reported in India and Southeast Asia, nearly the same range where *Protodaedalea* was discovered. The difference between the two genera is that the basidiospores of some species in the genus *Elmerina* are cylindrical and curved, just as the species of Exidiaceae do.

After the genus was published and re-described by Imazeki & Hongo (1965) it was ignored for a long time until in 1982 Bandoni *et al.* described and discussed it in detail again. There were different treatments

about its taxonomic position. The genus was placed in Tulasnellaceae originally (Imazeki, 1955) and later was transferred to Tremellaceae (Imazeki & Hongo, 1965). Bandoni *et al.* (1982) agreed with Imazeki & Hongo (1965). In *Dictionary of the Fungi* (Hawksworth *et al.*, 1995) the genus was transferred to Exidiaceae. Basidia of the genus are completely cruciately septate, therefore referring this genus in Tulasnellaceae belonging to Homobasidiomycetes is unreasonable. Though the placement of the genus in Tremellaceae is much more natural, there still exist some insufficient reasons. For example, the basidia of Tremellaceae are not sphaeropedunculate and hyphal system is monomitic. As to the treatment in Exidiaceae in *Dictionary of the Fungi*, indeed the basidia of some groups of Exidiaceae are sphaeropedunculate, but the hymenophore of Exidiaceae is often papillate rather than highly developed daedaloid to poroid. Moreover the hyphal system of the family is monomitic too. According to the key given in *Dictionary of the Fungi*, the genus possesses most of the characters of the family Aporpiaceae. As has been mentioned above, *Protodaedalea* and *Elmerina* are close to each other. The genus *Elmerina* is assigned to Aporpiaceae now. There are enough common characters to place *Protodaedalea* in the same family. If special stress is laid on the morphology of the basidia, this genus is also close to Tremellodendropsidiaceae. Probably this genus is a transitional taxon between the families mentioned above.

Most of the discussions above are based on the morphology only. Further evidences including the molecular ones are needed to confirm the natural systematic position of the genus.

ACKNOWLEDGMENTS One of the fruiting bodies in this paper was illustrated by Mr. D. C Zhang. The authors are very grateful to Dr. Z. L. Yang of Kunming Institute of Botany for his providing the valuable literatures and suggestions and N. Maekawa of Tottori Mycological Institute, Japan for loaning the precious specimens.

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原迷孔菌属在中国的首次报道

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摘 要：首次报道了产于中国的原迷孔菌属（新拟）*Protodaedalea* Imaz.。对本属所处的分类位置进行了探讨，认为本属与 *Elmerina* 接近故置之于 Aporpiaceae 中较为合适。该属为一个东亚特有属。

关键词：原迷孔菌属，毛原迷孔菌（新拟），新记录属，中国，分类位置

中图分类号：Q939.5 **文献标识码**：A **文章编号**：1007-3515（2001）02-0159-0162