

肉座菌目およびその分生子型の分類学的研究V

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Revision of the Hypocreales with cultural observations

V. *Podostroma giganteum* IMAI, *P. cornu-damae* (PAT.) BOEDIJN and
Hypocrea pseudogelatinosa sp. nov.

Yoshimichi DOI*

Abstract

Three species of the Hypocreales, *Podostroma giganteum* IMAI, *P. cornu-damae* (PAT.) BOEDIJN, and *Hypocrea pseudogelatinosa* KOMATSU et DOI, sp. nov., are described and illustrated in this paper. *P. giganteum* has large ivory-colored or alutaceous stromata and irregular *Verticillium*-type conidiophores with hyaline conidia. *P. cornu-damae* has irregular *Gliocladium-virens*-type conidial state which had been insufficiently illustrated by the present author. *Hypocrea pseudogelatinosa*, a new species, is rarely collected on logs of *Quercus* cultivating *Lentinus edodes*. Though stromata of the new species closely resembles those of *H. gelatinosa* (TODE ex FR.) FR. as well as those of *H. luteo-virens* DOI, the partspores of the new species are distinctly larger than those of the two species, and its conidial state is of the *Verticillium*-type, so that the species can be distinguished from the related two species.

Recently a rare species of *Podostroma* was collected by Mr. D. SHIMIZU, and he sent the specimen unheated to Dr. K. TUBAKI, and Dr. TUBAKI kindly sent the specimen to the author. The partspores of the fungus were still viable and they produced on culture media an irregular *Trichoderma-Verticillium*-type (somewhat resembling *Gliocladium*-type) conidiophores and hyaline conidia.

Another species of *Podostroma*, *P. cornu-damae*, was already reported from Japan by the present author, but the conidial state of the fungus was incompletely described and illustrated. Therefore, the conidial state of the species should now be re-described and re-illustrated; the species produced *Trichoderma*-like branches of conidiophores and *Gliocladium-virens*-like branchlets and tufted phialides with narrow angle at the top of the branchlets.

A new species of *Hypocrea*, named *H. pseudogelatinosa*, was collected by Mr. M. KOMATSU on a log of *Quercus* cultivating *Lentinus edodes*, and he made its cultures, descriptions and illustrations, which he sent to the author. The specimen is very close in its appearances to *Hypocrea gelatinosa* (this species is considered not to have been collected in Japan) as well as *H. luteo-virens* DOI, however, the partspores of the new species are distinctly larger than those of the other two species and the conidiophores are of the *Verticillium-Trichoderma*-type which are distinguished from those of the above-listed two species.

Above-mentioned three species of the Hypocreales will be illustrated and described in detail in this paper.

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The author is greatly indebted to Mr. D. SHIMIZU, Dr. K. TUBAKI, and to Mr. M. KOMATSU, who had so kindly sent the specimens and other helpful informations of the fungi.

Podostroma giganteum IMAI in Trans. Sapporo Nat. Hist. Soc. **12**: 115~116 (1932).

(Fig. 1)

Stromata dichotomously lobed, subcylindrical or palmately flat, 10~16 cm high, up to 8 cm wide, 2 cm thick, ivory-colored in fresh materials, alutaceous in dried specimens, slightly darker colored at the basal portions. T.o.s.s. (=tissue of the surface of the stroma on which perithecial ostioles are situated) of *t. intricata*, more compactly interwoven and more yellow-colored than the inner tissues. Hyphae of t.o.s.s. almost as thick as those of the inner tissues, 3~5 μ m in diam. Hyphae of central portion of str. more or less doliform between the septa, 6~8 μ m in diam. Perithecia ellipsoid, 200~300 μ m in longitudinal diam. Ostioles not protruding from stromata. Asci cylindrical with strongly thickened apical walls with a narrow pore at the central portion after discharge of part-spores, 16-partspored. Partspores hyaline, warted; the distal obovate-subglobose, 4.5~5.5 $\times$ 3.8~4.3 μ m; the proximal obovate or short cylindrical, 4.3~5.7 $\times$ 3.4~4.2 μ m.

HABITAT: On decayed trunks of *Fagus*, etc.

SPECIMEN EXAMINED: Nukumi-Daira, the foot of Mt. Iide, Okuni-Cho, Nishi-Okitama-Gun, Yamagata Pref., 9-X-1972, D. SHIMIZU, (TNS. D-1315=TNS-F-192711).

CULTURE: The following description is based on the above-listed specimen. Partspores germinating within 5 days; growth of mycelia comparatively slow; hyphae at first submerged, then slightly aerially tomentose within two weeks, white in mass, changing gray-brown colored after a month. Conidiophores dispersed over culture media, produced after 2~3 weeks, of irregular *Verticillium*-type resembling *Trichoderma*-type, up to 400 μ m high, 3~4 μ m in diam. in main axial hyphae. Phialides slender, attenuate, 10~25 $\times$ 1.5~2.5 μ m. Conidia hyaline, smooth, cylindrical to subglobose with a truncate base in each spores, 2.3~8.0 $\times$ 2.0~3.2 μ m. Chlamydospore-like cells produced in chain, obovate-ellipsoid, 12~23 $\times$ 7~12 μ m. Culture media grayish brown when old.

NOTE: Unfortunately the author could not examine the authentic materials, but the present specimen can be distinctly identified as *P. giganteum* on the basis of the original description. This species distributes in the cooler region of Japan (Northern districts of Honshu and Southern districts of Hokkaido).

This species has *t. intricata*-type t.o.s.s. and hyaline conidia, which are distinct characteristics for the Section *Homalocrea* of the genus *Hypocrea* as already mentioned in previous papers (Doi 1969, 1972).

Podostroma cornu-damae (PAT.) BOEDIJN in Jard. Bot. Buitenzorg, Ser. III. **13**: 271 (1934); Y. Doi, Bull. Natl. Sci. Mus. Tokyo **9**: 345~357 (1967). (Fig. 2)

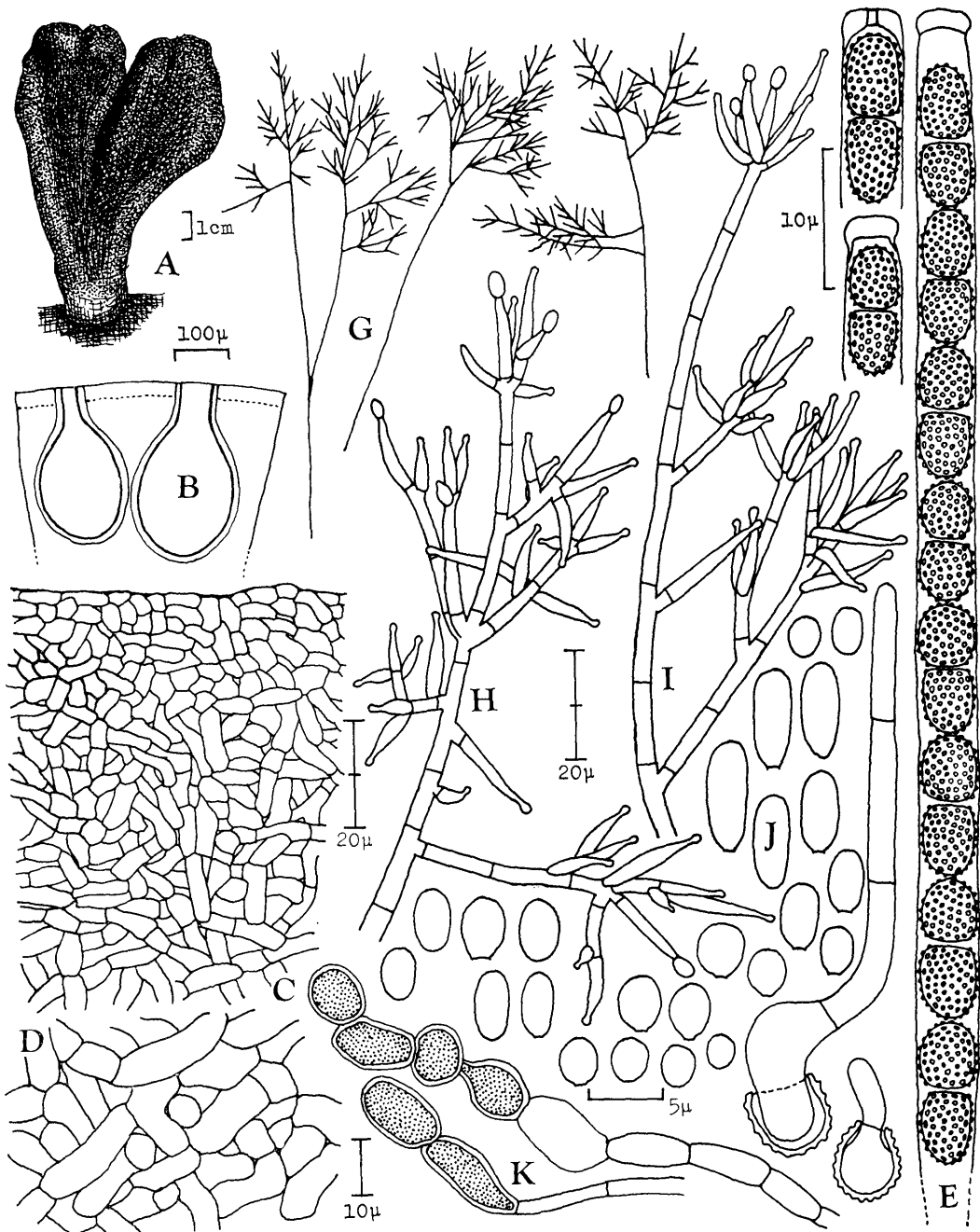


Fig. 1. *Podostroma giganteum* IMAI (TNS-F-192711)

A. Habit; B. Transverse section of Stroma; C. Surface tissue of stroma; D. Inner tissue of stroma; E. Ascus and partspores; F. Germination of partspores; G. Schematic types of conidiophores; H & I. Conidiophores; J. Conidia; K. Chlamydospore-like cells.

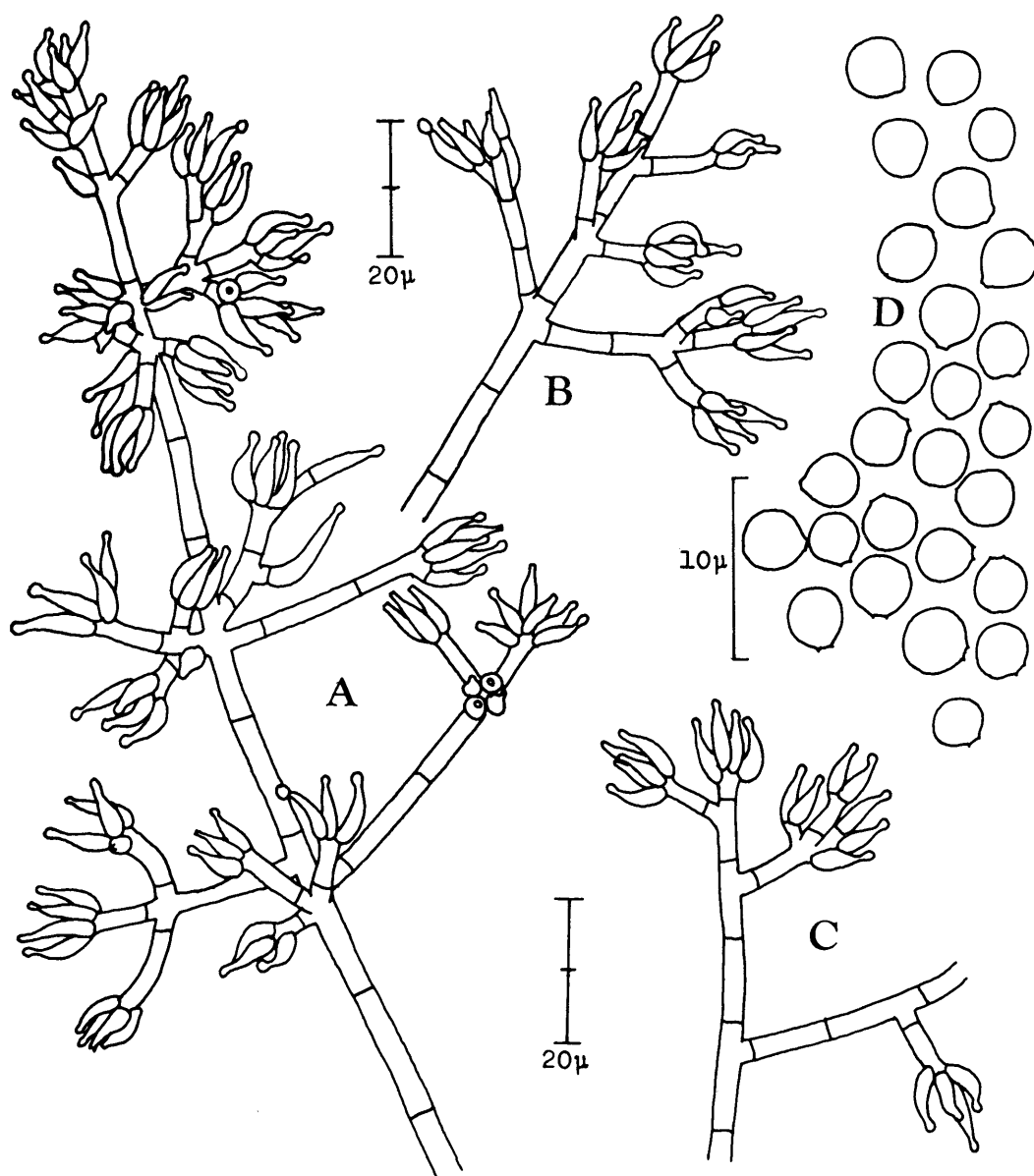


Fig. 2. Conidial state of *Podostroma cornu-damae* (PAT.) BOEDIJN (TNS-F-190012 & TNS-F-223564). A, B & C. Conidiophores; D. Conidia.

Basionym: *Hypocrea cornu-damae* PAT. in Bull. Soc. Mycol. Fr. **11**: 198, Tab. XIII (1895).

This species was described and illustrated by DOI (1967) with the conidial state insufficiently observed. Therefore, the conidial state is re-described and reillustrated here.

The following descriptions and illustrations are based on the cultures from TNS-F-190012 (=TNS. D-44, Hirakura, Mie, 7-IX-1965, Y. DOI), and TNS-F-223564 (=TNS. D-876, Mt. Daisen, Tottori Pref., 5-X-1970, Y. DOI).

Conidiophores of irregular *Gliocladium-virens*-type, up to 400 μm high, 2~4 μm in diam. in main axial hyphae. Phialides tufted with narrow angles at the top of *Trichoderma*-like branching hyphae. Conidia subglobose with a truncate base in each spores, pale green, almost smooth but sometimes appearing very faintly roughened, 2.5~3.5 μm in diam.

***Hypocrea pseudogelatinosa* KOMATSU et DOI, sp. nov.**

(Fig. 3)

Stromata sparsa vel aggregata, flava vel flavo-brunnea, 1~2 mm in diam., 0.5~1 mm crassa, marginibus tuberculatis. Partosporae virideae, verrucosae; partosporis distalibus subglobosis vel obovatis, 5.8~8.5 $\times$ 4.8~5.7 μm , partosporis proximalibus obovatis vel subcylindricis, 5.8~8.0 $\times$ 4.5~5.2 μm .

CULTURE: Auctis rapidis, conidiophoris *Verticillium*-typicis vel *Trichoderma*-typicis compactis, usque ad 200 μm longis, 2~3 μm in diam. Phialidibus gracilibus vel lageniformibus, 8~18 μm longis, 2~3 μm in diam. Conidia viridis, laevigata, ellipsoidea, 2.5~5.0 $\times$ 2.1~3.2 μm . Chlamydosporae subglobosae vel ellipsoideae, 6~13 $\times$ 6~8 μm .

Stromata disperse or aggregate, yellow or yellow-brown, 1~2 mm in diam., 0.5~1 mm thick. Margins of stromata roughened with the protuberations of perithecia. T.o.s.s. of *t. anguralis*; cells of t.o.s.s. thick-walled but not so strongly colored, polyhedral, 8~15 $\times$ 8~10 μm . Hyphae of inner tissue beneath perithecia ellipsoid, vertically elongate, 180~220 μm in longitudinal diam. Partspores green, warted; the distal subglobose or obovate, 5.8~7.5 $\times$ 4.8~5.7 μm ; the uppermost partspores of asci often up to 8.5 μm long; the proximal obovate to subcylindrical, 5.8~8.0 $\times$ 4.5~5.2 μm .

HABITAT: On decayed trees of *Quercus*, etc.

HOLOTYPE SPECIMEN: On decayed trunk of *Quercus serrata* cultivating *Lentinus edodes*, Kokouge, Tottori City, Japan, 13-X-1969, M. KOMATSU (KOMATSU's no. Tottori 209=TNS-F-192712).

CULTURE: The following description is based on the cultures from the Holotype material isolated by Mr. M. KOMATSU.

Growth rapid; conidiophores of the normal *Verticillium*-type when the conidiophores are dispersed over culture media, or compact form of the *Trichoderma*-type when conidiophores forming compactly interwoven colonies, up to 200 μm high, 2~3 μm in diam. in main axial hyphae. Phialides slender or flask-shaped, 8~18 μm long, 2~3 μm in diam. Conidia green, smooth, ellipsoid, 2.5~5.0 $\times$ 2.1~3.2 μm . Chlamydosporae abundant in aged cultures, mainly produced on the hyphae of minute diam., 0.7~1 μm , subglobose or ellipsoid, 6~13 $\times$ 6~8 μm .

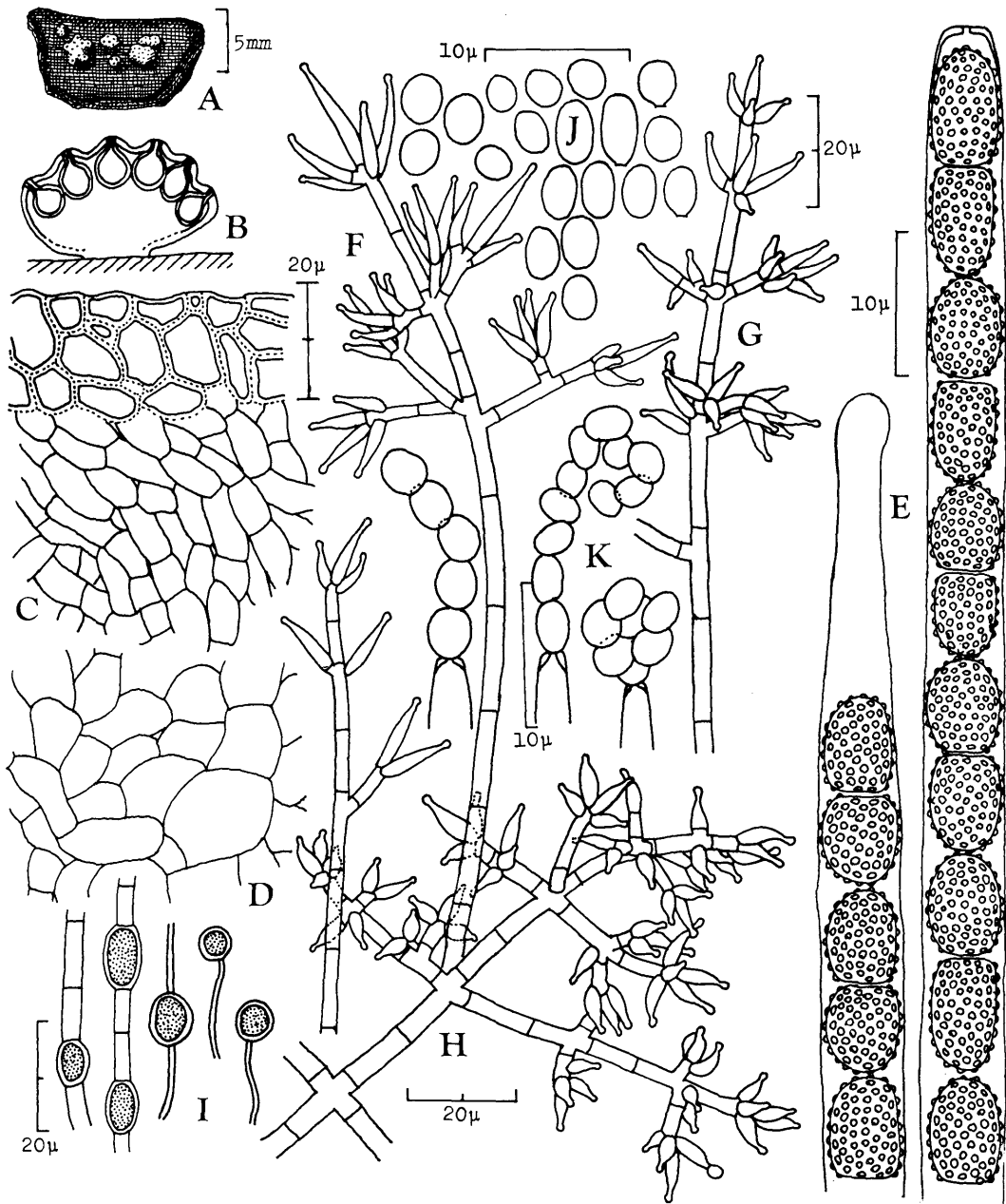


Fig. 3. *Hypocrea pseudogelatinosa* KOMATSU et DOI, sp. nov. (TNS-F-192712)

A. Habit; B. Vertical section of stroma; C. Vertical section of surface tissue of stroma; D. Vertical section of inner tissue; E. Ascus and partspores; F, G & H. Conidiophores; I. Chlamydospores; J. Conidia; K. Conidia in mass or in chain.

NOTE: This species resembles *Hypocrea gelatinosa* (TODE ex FR.) FR. as well as *H. luteo-virens* DOI in their appearances of stromata on the other hand, the new species has the larger partspores than other two species, and the *Verticillium*-type conidial state which can be distinguished from that of *H. gelatinosa* reported by WEBSTER (1964) and from that of *H. luteo-virens* illustrated by DOI (1972).

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和 文 摘 要

肉座菌目およびその分生子型の分類学的研究 V

土 居 祥 晃

肉座菌目に属する3種, *Podostroma giganteum* IMAI, *P. cornu-damae* (PAT.) BOEDIJN および *Hypocrea pseudogelatinosa* KOMATSU et DOI (新種) を記載報告した。

P. giganteum は、今井博士によって北海道から報告された稀種で、象牙色—淡皮革色の15cmに達する巨大な子実体は特異で同定は容易である。今回報告した分生子型は清水大典氏、椿啓介博士の好意により新鮮な個体をお送りいただいたことによってはじめて明らかになったものである。分生子型は不規則な *Verticillium* 型で分生子は無色であった。この性質は、子座の表層組織が *t. intricata* 型であることと相関しており、子座の外形上の特徴を除けば、*Hypocrea* 属 *Homalocrea* 節に含めるべきすべての性質を備えていることになる。

P. cornu-damae については、筆者の1967年の報告では分生子型の特徴の把握が不十分であったので記載を補ったものである。本菌の分生子型は、分生子梗は *Trichoderma* 型で、Phialide は *Gliocladium virens* 型に狭い角度の束になって菌糸端に生じるという特徴をもっている。

H. pseudogelatinosa は、小松光雄氏が採集された珍しいボタンタケの1種で、「ヨーロッパ」で普通(日本から未報告)の *H. gelatinosa* および筆者の報告した *H. luteo-virens* とよく似ている。この近似2種と簡単に区別できる形質としては、2次子嚢胞子 (Partspore) がはるかに大型であること、分生子型が明確な *Verticillium*-type であることがあげられる。