

PETRAKIA IRREGULARIS, A NEW FUNGUS SPECIES

H. A. VAN DER AA

Centraalbureau voor Schimmelcultures, Baarn.

SUMMARY

Petrakia irregularis van der Aa, nov. spec. is described as being different from *Petrakia echinata* (Pegl.) Sydow, the type-species of the genus. These two species are compared with the other species of *Petrakia* and with other genera with comparable spores.

Amongst several fungi isolated from dead branches of *Acer pseudoplatanus* in the spring of 1967, a very remarkable species belonging to the genus *Petrakia* was found. This fungus sporulated on various media, especially on potato-carrot- and cornmeal-agar. Examination of specimens of *Petrakia echinata* (Pegl.) Sydow, from the Botanical Museum in Stockholm (Herbarium Sydow), proved the isolate to be different from this species, nor did it agree with any other species of *Petrakia* described up till now. Moreover it was found, that the description of *Petrakia echinata* by SYDOW (1913) has to be emended in some critical points.

Petrakia irregularis van der Aa, nov. spec.

Sporodochiis rotundatis, hemisphaericis. Conidiophoris cylindraceutis, septatis, paullum coloratis, mycelio libere distributis vel in sporodochiis aggregatis.

Dictyoaleuriisporis brunneis, oblongius irregularibus, ad septa constrictis, 36–96 μ longis, 15–44 μ latis; 6–30 appendicibus praeditis, mollibus, 20–50 μ longis, raro ramificatis, ad basim inflatis, apicibus rotundatis vel clavatis, hyalinis vel ad basim brunneolis.

Isolatum a ramis emortuis Aceris pseudoplatani. Typus in Herb. C.B.S. no. 306.67.

In culture on corn-meal- and potato-carrot-agar growing slowly. Mycelium grey, in older cultures becoming darker, aerial mycelium almost absent, with irregularly distributed brownish-black tufts. Sporophores scattered on undifferentiated hyphae, or grouped in sporodochia, up to 5 mm in diameter. The spores arise terminally, as club-shaped swellings, developing into aleuriospores. By transversal and subsequent longitudinal septation, multi-celled spores are formed, with distinct constrictions at each septum, very irregular in shape, sometimes forming large complexes by fusion.

The spores are 36–96 μ long and 15–44 μ in diameter, smooth walled, greenish when young, later turning dark brown; they have 6 to 30 appendages, 20–50 μ long, more or less slack, sometimes tortuose, rarely branched, almost hyaline, finally brownish at the base, continuous or up to 4 septate with mostly a

rounded, sometimes conspicuously club-shaped end. The base of the appendages is swollen, resembling the basal swellings of the appendages on the cleistothecia of *Phyllactinia guttata* (Fr.) Lév. Dried and living cultures are maintained at the C.B.S. in Baarn, no. 306.67.

Petrak's specimen of *Petrakia echinata*, used by SYDOW (1913) when he described the genus *Petrakia*, is preserved in F. Petrak, Flora Bohemiae et Moraviae exsiccata, II ser. – I Abt. Pilze, Lfg. 18, no. 900 (ex herb. Sydow). On withering leaves of *Acer pseudoplatanus* it forms large, rounded or irregular shaped spots, sometimes zonate, variable in colour. Black sporodochia occur scattered on the upper leaf surface.

The spores originate in the same way as in *Petrakia irregularis*, by septation of a club-shaped end, on very densely growing, unbranched sporophores; their development also resembles that of *Petrakia irregularis*. The ripe spores are spherical to oblong, finally dark-brown with a varying number of transversal and longitudinal septa, constricted only at the middle septum. The spores measure $23\text{--}35 \times 16\text{--}27 \mu$, this conflicts with the diagnosis of Sydow, who indicates $16\text{--}22 \times 3\text{--}4 \mu$. The number of appendages is 3–8, rarely up to 10. They are slightly olivaceous, rigid, up to 20μ long and $3\text{--}6 \mu$ thick, with the broadest part at the base, and slightly narrowing towards the rounded tip. No *Phyllactinia*-like swellings occur. The identity of *Epicoccum echinatum* Pegl., the basionym of *Petrakia echinata* could not be demonstrated, because it was impossible to find the original specimen of this species. According to SACCARDO (1895), it also occurs on leaves of *Acer pseudoplatanus*, the spores have a diameter of $28\text{--}30 \mu$, and are provided with 12–14 appendages.

Another specimen of *Petrakia echinata* (Pegl.) Sydow, from F. Petrak in *Mycotheca generalis* 1352 (Bot. Museum Stockholm) occurring also on *Acer pseudoplatanus*, shows very well developed spores and agrees in detail with the collected specimen used for the description.

A specimen, labelled *Petrakia echinata*, collected on *Acer italicum*, distributed in F. Petrak, Flora Bohemiae et Moraviae exsiccata II ser. I Abt. Pilze, Lfg. 18, no. 900/b. is less developed. The spores are not ripe enough for comparison. Although bigger than those of *Petrakia echinata*: $30\text{--}40 \times 19\text{--}23 \mu$, there are rarely more than 3 appendages, and the oblong spores predominate. It is therefore impossible to place this specimen in one of the species known to occur on *Acer pseudoplatanus*.

From the above it is clear that *Petrakia irregularis* differs in several characters from *Petrakia echinata*. The spores in *Petrakia irregularis* are much bigger, sometimes up to 100μ long, whereas they are up to 35μ in *Petrakia echinata*. The spores in *Petrakia irregularis* are constricted at each septum, in *Petrakia echinata* only at the middle septum. There is a great difference in form, measurements and number of appendages. The basal swelling in *Petrakia irregularis* is an especially distinctive character, already discernable in young spores. For the sake of completeness the remaining species described in *Petrakia* are reported here, but only by the characters in which they differ from *Petrakia irregularis*.

In *Petrakia deviata* Petrak apud Watzl (1937), the spores have only one termi-

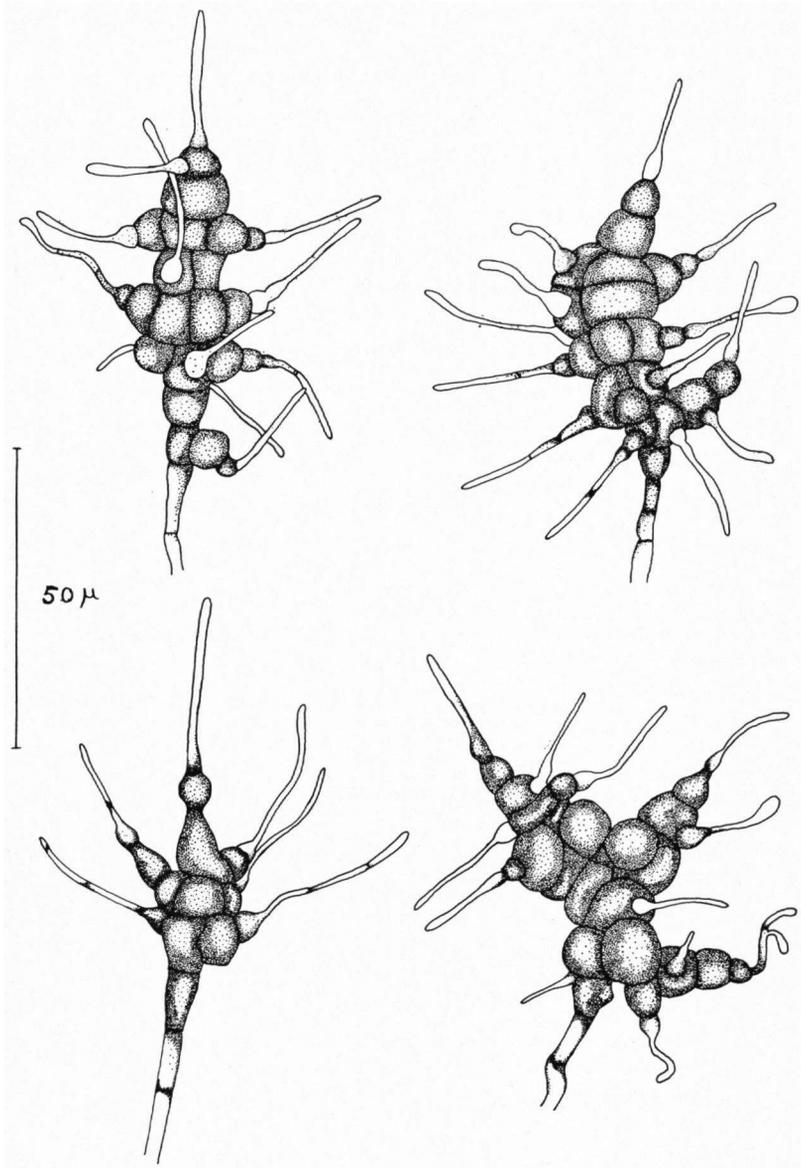


Fig. 1. *Petrakia irregularis*, spores.

nal appendage, 2,5–8 μ long and are much smaller: 15–27 \times 11–15 μ . The type specimen was collected on living leaves of *Acer campestre*.

Petrakia kambakkensis Subramanian, an Indian species collected from dead wood, has only 1–7 thick-walled appendages, which are confined to the distal cells. The spore size is 25–45 \times 16–26 μ .

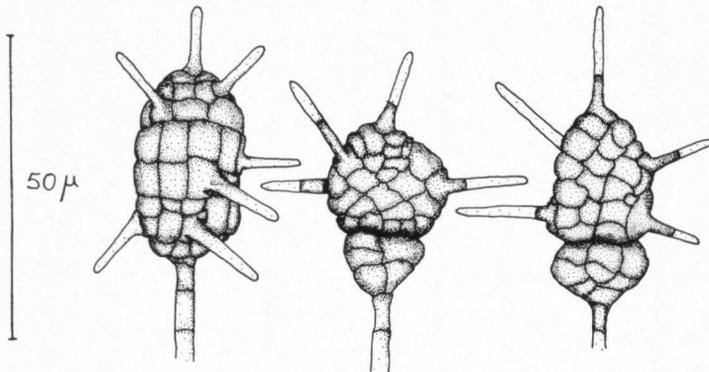


Fig. 2. *Petrakia echinata*, spores of the type specimen.

Petrakia cochinchensis Subramanian collected in India on *Cocos nucifera* has spores with a maximum of 15 appendages, up to 140 μ long and occurring on the upper cells. The spores measure 37–68 \times 28–42 μ (SUBRAMANIAN 1957).

In some other genera species are described with dictyospores bearing appendages resembling those of *Petrakia*. In *Acrodictys brevicornuta* Ellis and *Acrodictys appendiculata* Ellis, but especially in the latter species, *Petrakia*-like appendages occur (ELLIS, 1961, 1965). However, in *Acrodictys*, often conidiophores develop successive terminal proliferations after the conidium has fallen, a character that is not found in *Petrakia*. Moreover, in *Acrodictys*, no characteristic sporodochia occur, the spores arise singly or in groups of 2–3 laterally on the hyphae.

Some specimens of *Oncopodiella trigonella* (Sacc.) Rifai, the only species of the genus *Oncopodiella* (RIFAI 1963), were also studied. This species differs from *Petrakia* in its characteristic type of conidiophore, which elongates by subapical proliferation and produces new growing points to one side of the previous conidium-bearing apex.

In genera characterized by sporodochia and dark-coloured dictyospores, such as *Berkleasmium* Zobel (MOORE 1958, 1959b), *Epicoccum* Link ex Wallr. (SCHOL-SCHWARZ 1959) and *Piricauda* Bubak (MOORE 1958, 1959a), the spores never develop *Petrakia*-like appendages.

ADDENDUM

When this paper was already in press, an article by F. PETRAK: Über die Gattungen *Petrakia* Syd. und *Echinospodium* Woron. was published in *Sydowia* 20: 186–189 (1968, for 1966). The author showed that *Echinospodium aceris* Woronichin in: *Monit. Jardin Bot. Tiflis* Livr. 28: 25, is a synonym of *Petrakia echinata* (Pegl.) Syd., and gives a new, more correct description of this species.

PETRAKIA IRREGULARIS, A NEW FUNGUS SPECIES

REFERENCES

- ELLIS, M. B. (1961): Dematiaceous Hyphomycetes II. *Mycol. Pap.* 79.
— (1965): Dematiaceous Hyphomycetes VI. *Mycol. Pap.* 103.
MOORE, R. T. (1958): Deuteromycetes I. The Sporodesmium complex. *Mycologia* 50: 681–692.
— (1959a): The genus *Piricauda* (Deuteromycetes). *Rhodora* 61: 87–120.
— (1959b): The genus *Berkleasium*. *Mycologia* 51: 734–739.
RIFAI, M. A. (1965): On *Sporodesmium trigonellum* Sacc. *Persoonia* 3: 407–411.
SACCARDO, P. A. (1895): *Sylloge fungorum* 11: 654.
SCHOL-SCHWARZ, M. B. (1959): The genus *Epicoccum* Link. *Trans. Brit. Mycol. Soc.* 42: 149–173.
SUBRAMANIAN, C. V. (1957): Two new species of *Petrakia*. *Sydowia Beih.* 1: 14–16.
SYDOW, H. & P. (1913): Novae fungorum species. *Ann. Mycol.* 11: 402–408.
WATZL, O. (1937): Über die Bäume und Sträucher des von der Baramba entwässerten Gebietes der Chodschalgruppe und deren Blattkrankheiten. (Ein Beitrag zur Flora des südwestlichen Zentralkaukasus). II. Pilze an lebenden Blättern. *Botan. Zentr. B. Beih.* 57: 431–440.