

## A new record of *Hyphochytrium catenoides* from Poland

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Hassan S. K. M.: *A new record of Hyphochytrium catenoides from Poland*. Acta Mycol. 18(2):149-154, 1982(1986).

The present paper contains the first Polish record of *Hyphochytrium catenoides* Karling. The fungus has been isolated on the snake skin baits from a pond water sample collected near Warsaw.

During investigation of zoosporic water fungi of Poland, *Hyphochytrium catenoides*, previously unrecorded in this country, has been isolated from water. Samples were taken from the shore-line of a small lake in Żąbki, near Warsaw, on 14.04.1980. This is the second record of this fungus from Europe in general and the first one from east Europe.

Some sterile snake skin baits were put in five sterile Petri-dishes, each one containing 20 ml of the water sample. Baits were incubated at room temperature (23-25°C). This fungus was observed after 15-19 days on a small number of the used snake skin baits and subcultured on the same substrate.

The fungus was observed under an optical microscope in a bright field, drawn with camera lucida and photographed.

On most snake skin baits polycentric thalli composed of sporangia and tubular hyphae-like connections occurred (Pl. I). This fungus was identified after observation of zoospores as *Hyphochytrium catenoides*.

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Karling (1939) and Barr (1970) show that *H. catenoides* is a soil inhabitant although Siang (1949) reports it as an airborne fungus. In the present investigation, the author has reported it as a rare water fungus. According to Karling (1939), *H. catenoides* is weakly parasitic and saprophytic in *Zea mays*, *Nitella flexilis* and *Chara coronata* in the United States. Booth and Barrett (1971) isolated *Hyphochytrium catenoides* solely on snake skin from soil samples taken from in medge polygons. My material was obtained also solely on snake skin, but by using lake water samples as a source.

The study of the Polish strain of *H. catenoides* confirmed therefore the opinion that this species is cosmopolitan in its distribution and occurs not only in soils but also in at least small water bodies, and that it is an inhabitant of organic matter mainly of animal origin, in spite of Karling's original findings.

Thallus of Polish strain is predominantly polycentric and intramatrical, usually hypha-like, and consisting of a linear series, up to 150  $\mu\text{m}$  in extent, of intercalary and terminal swellings and sporangia connected by tubular hyphae or isthmuses 2-40  $\mu\text{m}$  in length and 2-30  $\mu\text{m}$  in diameter (Figs 1-3). Sporangia are terminal or intercalary, delimited by cross septa, hyaline, smooth, spherical, fusiform or irregular, 13-20  $\mu\text{m}$  in diameter with 2-9 single or branched, straight,

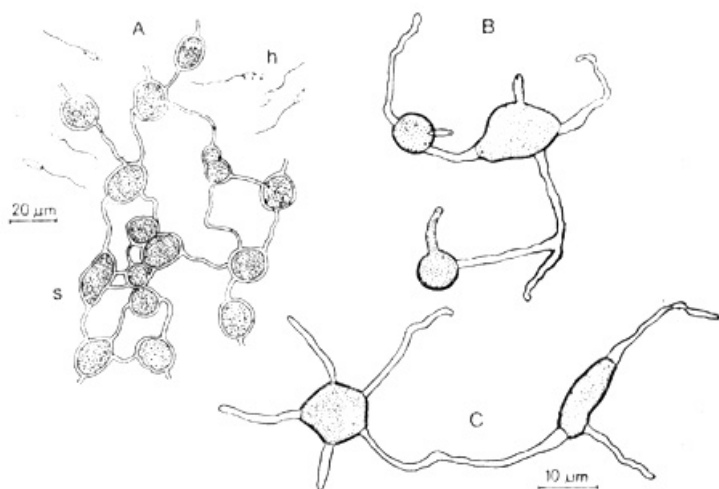


Fig. 1. *Hyphochytrium catenoides*

A — a part of young prostrate polycentric thallus growing on snake skin and free-swimming zoospores; B, C — two young developing thalli composed of few sporangia; h — hyphae-like connections, s — sporangium

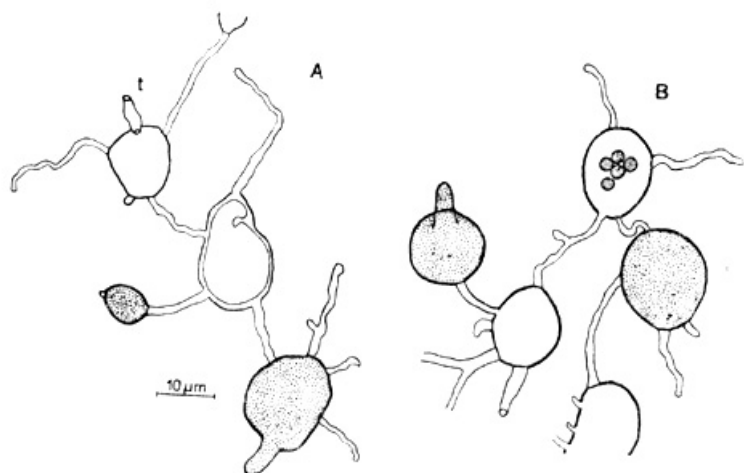


Fig. 2. *Hyphochytrium catenoides*  
A, B — some older thalli with some empty sporangia; t — exit tube

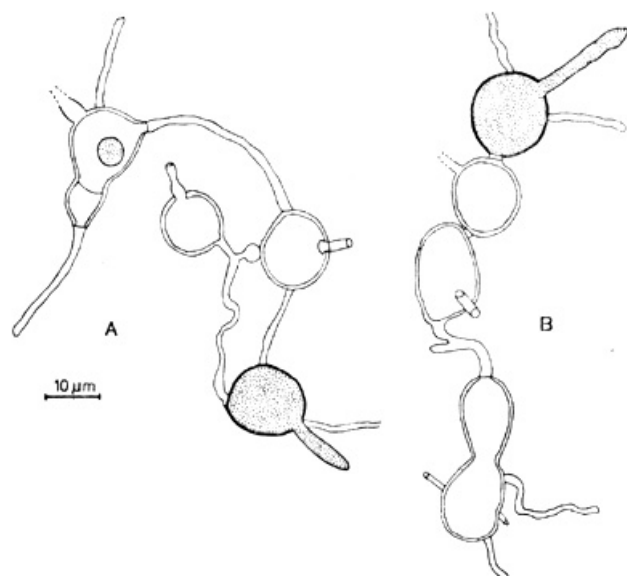


Fig. 3. *Hyphochytrium catenoides*  
A, B — two old thalli

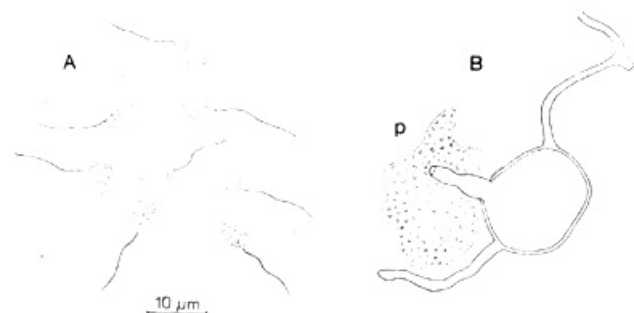


Fig. 4. *Hyphochytrium catenoides*

A — zoospores; B — an empty zoosporangium which has emitted its protoplasmic content (p) into the water. It is a rare type of the zoosporogenesis; p — protoplasm

curved, coiled, or irregular exit tubes, 4.5-19  $\mu\text{m}$  in length and 2.2-45  $\mu\text{m}$  in diameter (Figs 4, 5).

Zoospores are oval or elongate and anteriorly uniciliate, 8.4-9.6  $\mu\text{m}$  in length and 2.8-3.4  $\mu\text{m}$  in diameter with several small slightly refractive granules (Fig. 4 A). Slide material deposited in the Herbarium of Botany Institute of Warsaw University, Poland.

Barr (1970) stated that no differences in sporangium size or shape could be distinguished between the different isolates of *H. catenoides* growing in pollen, although exit tubes of the Arizona isolate were generally long, up to 95  $\mu\text{m}$ , whereas those of other isolates were short. This agrees with the original description of *H. catenoides* (Karling 1939), and other data on the variability of this fungus obtained by many authors.

Karling (1939), described *H. catenoides* as having zoospores 1.5-2.0  $\times$  3-3.5  $\mu\text{m}$ , whereas Booth and Barrett (1971) reported the size apores as 2-4  $\mu\text{m}$  long and 2-3  $\mu\text{m}$  wide.

Barr (1970), in his comprehensive review, pointed out that the compiled measurements for all isolates of *H. catenoides* gave the average size of zoospores as 3.7  $\mu\text{m}$  wide and 6.7  $\mu\text{m}$  long, and the largest spore was 5.0  $\times$  8.5  $\mu\text{m}$ , longest 2.5  $\times$  10.0 and smallest 2.5  $\times$  5.0  $\mu\text{m}$ .

Barr (1970) considered *H. catenoides* to be the most common and worldwide distributed species of the genus. It has been reported from the United States (Karling 1939), Europe, South America, Himalayas, Australia (Persiel 1960 a and b), Iceland (Höhnk 1960), Antarctica (Hander and Persiel 1962), India (Karling 1966), New Zealand (Karling 1967) and South Pacific Islands (Karling 1968).

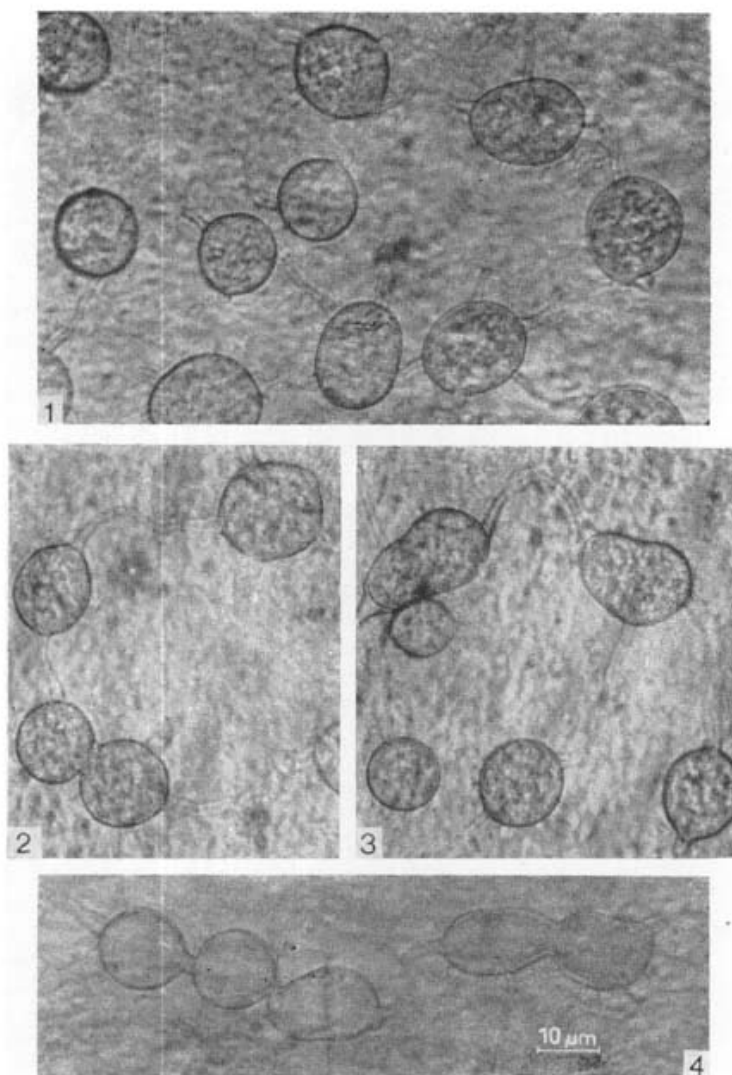


Plate I

*Hyphochytrium catenoides*

1, 2 — two fragments of the prostrate thalli; 3 — part of the young thallus with nearly mature zoosporangia; 4 — part of the older thalli showing empty zoosporangia

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## REFERENCES

- Barr D. J. S., 1970, *Hyphochytrium catenoides*: A morphological and physiological study of North America isolates. *Mycologia* 62: 492-503.
- Booth T., Barrett P., 1971, Occurrence and distribution of zoosporic fungi from Devon Island, Canadian Eastern Arctic. *Can. J. Bot.* 49: 359-369.
- Hander R., Persiel I., 1962, Notiz über das Vorkommen niederer Erdphycomyceten in der Antarktis. *Arch. Mikrobiol.* 41: 44-50.
- Höhnk W., 1960, Mycologische Notizen. II. Veroff, Inst. Meeresforsch. Bremen. 7: 63-69.
- Karling J. A., 1939, A new fungus with anteriorly unciliate zoospore: *Hyphochytrium catenoides*. *Amer. J. Bot.* 26: 512-519.
- Karling J. A., 1966, The chytrids of India with a supplement of other zoosporic fungi. *Sydowia* 6: 1-125.
- Karling J. A., 1967, Some zoosporic fungi of New Zealand. IX. *Sydowia*, 20: 137-143.
- Karling J. A., 1968, Zoosporic fungi of Oceania. I. *J. Elisha Mitchell Sci. Soc.* 84: 166-178.
- Persiel I., 1960 a, Über die Verbreitung niederer Phycomyceten in Böden aus verschiedenen Höhestufen der Alpen und an einigen Standorten subtropischer und tropischer Gebirge. *Arch. Mikrobiol.* 36: 257-282.
- Persiel I., 1960 b, Beschreibung neuer Arten der Gattung *Chytriomycetes* und einiger seltener niederer Phycomyceten. *Arch. Mikrobiol.* 36: 283-305.
- Sing W., 1949, Are aquatic *Phycomycetes* present in the air? *Nature* 164: 1010.

**Hyphochytrium catenoides** znalezione w Polsce

## Streszczenie

Autor wyizolował z próby wody ze stawu w Ząbkach koło Warszawy na przynętę z wylinki zaskrońca grzyb keratynofilny, *Hyphochytrium catenoides*. Jest to gatunek nowy dla flory Polski.