

Nowakowskiella keratinophila sp. nov., a keratinophilic fungus from the brackish water

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H a s s a n S. K. M., A. B a t k o: *Nowakowskiella keratinophila sp. nov., a keratinophilic fungus from the brackish water*, Acta Mycol. 22(2): 193-196, 1986 (1988).

Nowakowskiella keratinophila sp. nov. isolated from the brackish water of the bay Zalew Wiślany in Poland on snake skin bait is described. The new species is related to *Nowakowskiella elegans* Nowakowski but differs in the type of operculation of sporangia and the affinity to keratinized substrata.

Over twenty samples of brackish water taken from the bay Zalew Wiślany in the vicinity of Frombork were baited with routine baits – bits of onion and snake skin in the middle of July 1984. After one month of incubation at room temperature an abundant growth of water fungi on most baits appears. Among others – rhizomycelium of two common species of *Nowakowskiella* – *N. elegans* Nowakowski and *N. macrospora* Karling, as well as of *Cladochytrium hyalinum* Berdan developed on most of onion skin baits and produced numerous sporangia and zoospores. In one instance, however, the rhizomycelial growth has been recorded not on the cellulosic bait but on the keratinic one. The typical net of thin threads with regularly distributed spindle organs and many zoosporangia on the ends covered all surface of the snake skin bits and sporulated vigorously. The onion skin immersed in the same water yielded with no *Nowakowskiella*, and only moderate growth of *Cladochytrium hyalinum* and of an unidentified *Rhizophydium* were detected on this bait.

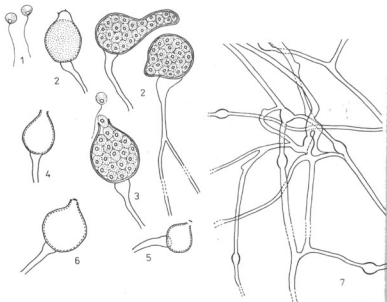
The hitherto known member of the genus *Nowakowskiella* Schroeter were well-known inhabitants of cellulose – containing substrates (S p a r r o w 1960) and only *N. pitcairnisensis* Karling were isolated on hemp seeds and has a

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predilection to "fatty substrata" (K a r l i n g 1968). Present authors during some years of work with saprophytic zoosporic fungi also do not found any member of rhizomycelial fungi developing on animal substrata. What is more, the fungus under consideration distinctly differs from other two members of the same genus living in the same locality (but not represented in the same sample). It has been decided, therefore, to describe it as a new one.

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Rhizomycelium profusum, extensum, ramosum, 2.4-7.1 μ m diametro, filiforme, cum extensionibus fusiformibus, aseptatum, Sporangia plerumque oboviformia aut late-obpyriformia, papillam brevem habentia, 24.2-73.4 μ m diametro et 25.5-43.6 μ m longa, zoosporae sphaericae, 7.5-9 μ m diametro, cum flagellis 49 μ m longis;



Figs 1-7. *Nowakowskiella keratinophila* sp. nov.

1 - two-swimming zoospores; 2 - an unripe zoosporangium with still exposed endooperculum; mature zoosporangium; 3 - a fully ripe zoosporangium liberating zoospores singly; 4, 5, 6 - three emptied zoosporangia; at the mouth of two of them dehiscent opercula are visible; 7 - the rhizomycelium with numerous aseptate spindle organs; 1 mm = 1.5 μ m

globuli refractivi hyalini, 2.2-3.8 μm diametro, in zoosporis sunt. Sporae perdurantes ignotae. Fungus saprophyticus aquaticus, super exuvio serpenti ad Frombork lectus.

H o l o t y p u s: in herbario Instituti Botanici Universitatis Varsaviensis sub numero 27829 depositus est.

Rhizomycelium profuse, extensive, branched, 2.4-7.1 μm in diameter, thread like and mostly isodiametric, aseptate, with numerous aseptate spindle organs 9.1-12.8 μm long and 5.9-9.7 μm wide and scarcely branched thin rhizoids; wall slightly thickened, content hyaline, homogenous. Sporangia 242-374 μm in diameter and 25.5-43.6 μm long, with small apophyses, sometimes not apophysate, moderately abundant, regular, mostly ovoid, broadly ovoid or obpyriform, with moderately prominent conical papilla ended at maturity by a shallowly sunken operculum 4.6-6.8 μm in diameter. Apophysis more or less hemispherical, 9-11.5 μm in diameter, wall thinner than upon sporangium. Zoospores spherical, 7.5-9.1 μm in diameter, with flagellum up to 49 μm long an eccentric hyaline refringent globule 2.2-3.8 μm in diameter, and clear round zone in the coarsely granular content, fully formed inside the sporangium and liberated collectively or singly after the dehiscence of the endooperculum. Resting spores unknown.

H a b i t a t: isolated on the snake-skin bait from the brackish water taken from the bay Zalew Wiślany in Poland, in the vicinity of Frombork at July 1984.

H o l o t y p e: slide no 27829 deposited in the Herbarium of the Institute of Botany, Warsaw University, Warsaw, Poland.

Amongst 15 species of *Nowakowskiella* hitherto described (B a t k o and H a s s a n 1982) only one — *Nowakowskiella pitcairnensis* Karling — do not grew readily on cellulosic substrate (K a r l i n g 1968). This fungus has been described, however, from extremely remote locality (Pitcairn Island) and distinctly differs from our fungus in morphology of exooperculate sporangia and in zoospores which are about 3 μm diameter.

From the purely morphological point of view they are two species with shallowly sunken opercula: *N. macrospora* Karling (K a r l i n g 1945) and *N. moubasheriana* Hassan (H a s s a n 1984). Both species have, however, bigger zoospores with larger refractive granule. Moreover, the sunken operculum of *N. macrospora* is mostly umbonate while in our fungus operculum is shallowly dome-shaped.

It may be concluded, therefore, that our fungus differs sufficiently from all other members of the genus *Nowakowskiella* and may be considered as a new species. Moreover, the new species has the unique ability to digest keratine.

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