

An Unusual *Penicillium* on Rockwool in Glasshouses

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Abstract

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Species of the genus *Penicillium* are ubiquitous saprotrophs, spreading easily by conidia through the atmosphere. They appear most frequently in soil and on various organic matter. *Penicillium olsonii* had been found on seeds of various plants in the Philippines, Thailand and Indonesia. In our case, this fungus was found on the strips of rockwool in the glasshouses of Horticultural Faculty in Lednice (Mendel University of Agriculture and Forestry in Brno) in 2000 and 2001. The strain is preserved in the Czech Collection of Microorganisms, Brno, Czech Republic, as CCM 8259.

Keywords: *Penicillium olsonii*; rockwool; glasshouse

A dusty green growth of algae, followed by a light beige layer of a fungus was found on strips of rockwool that served as rooting medium in the glasshouses of Horticultural Faculty in Lednice (Mendel University of Agriculture and Forestry in Brno) in 2000 and 2001. Tomatoes, cucumbers and peppers were grown in the glasshouses; water and nutrients were supplied by droplet irrigation. The fungus was found only on the rockwool, no infections or disorders of the plants were recorded.

Microscopic examination revealed that the coherent dark green growth consisted of algae of the genus *Chlorococcum*. Growing on them were conspicuous light beige colonies of a *Penicillium* sp.; they sporulated in concentric rings, grew very fast, and eventually covered the strips of rockwool completely. When the source of plant nutrition was removed, first the algae and then the fungus died.

The fungus was isolated into pure culture and tentatively identified as *Penicillium olsonii* Bainer & Sartory.

Characteristics of our isolate

Colonies on CYA (Czapek yeast-autolysate agar according to PITT 1979), 25°C, 7 days: greyish green, velutinous, radially lightly sulcate, diam. 28–31 mm, margin entire, exudate lacking, reverse pale brown.

Colonies on MEA (Malt extract agar according to PITT 1979), 25°C, 7 days: greyish green, velutinous, flat, diam. 17–19 mm, margin inconspicuously fasciculate, exudate lacking, reverse without colour.

Colonies on G25N (Glycerol-nitrate agar according to PITT 1979), 25°C, 7 days: greyish green, velutinous, sulcate, diam. 10 mm, exudate lacking, reverse uncoloured. No growth observed at 37°C.

Conidiophores up to 500 µm long (typically 300 to 400 µm), 4–7 µm wide, walls hyaline, smooth, penicilli complex, terverticillate or quaterverticillate, with 2–6 ramis 6–14 µm long, metulae 5–10 µm long, phialides ampulliform with short collula, 6–12 × 3–4 µm, conidia ellipsoidal, 3–4 × 2.5–3 µm, with walls smooth, borne in disordered chains. This strain is preserved in the Czech Collection of Microorganisms, Brno, Czech Republic, as CCM 8259.

An accurate identification of this isolate is difficult. Three species may be considered: *P. olsonii*, *P. brevicompactum* Dierckx and *P. arenicola* Chalabuda. *P. olsonii* as well as *P. brevicompactum* belong to the subgenus *Penicillium* (PITT 1979). Although originally placed into different sections (*Coronatum* and *Penicillium*, respectively, in PITT 1979), they were later considered to be closely

related and both accommodated in the section *Penicillium*, series *Olsonii* (STOLK & SAMSON 1985; PITT & HOCKING 1997). Both species form green colonies and have relatively robust stipes with hyaline, glabrous walls. Our isolate differs from *P. olsonii* by much shorter stipes, and from *P. brevicompactum* by more complex penicilli. In morphological characters, our isolate has an intermediate position between these two species.

Penicillium arenicola has colonies of beige colour and stipes with brown thicker walls. These characters are lacking in our isolate, though the penicilli are very similar. Nevertheless, the beige colour of colonies observed in the glasshouse, but not obtained in pure culture, may indicate some relationships also to *P. arenicola*. This species is considered unrelated to any other species of this genus (PITT 1979) and is placed into the section *Inordinatae*.

Species of the genus *Penicillium* are ubiquitous saprotrophs, spreading easily by conidia through the atmosphere (DOMSCH & GAMS 1972). They occur all over the world, most frequently in soil and on various organic matter (FASATIOVÁ 1979). Besides beneficial aspects like production of antibiotics, and ripening of different kinds of cheese and sausages, they also cause fruit rotting, produce mycotoxins, cause allergies etc..

Penicillium olsonii was found on mould ripened sausages, but production of mycotoxins was not detected (FRISVALD & FILTENBORG 1989). It was also found in

the Philippines on seed of soybean, maize and paddy rice, in Thailand on seed of maize, peanuts, cashews, sorghum, mung beans and copra, in Indonesia it appeared on peanuts and mung beans (PITT & HOCKING 1997).

Penicillium olsonii does not represent a risk to plants and to healthy people working in glasshouses. However, there may be a risk of allergies in some older or sensitive persons.

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Souhrn

ŠAFRÁNKOVÁ I., MARVANOVÁ L. (2001): Výskyt neobvyklého druhu *Penicillium* na čedičové vatě ve sklenících. *Plant Protect. Sci.*, **37**: 149–150.

Houby rodu *Penicillium* jsou ubikvističtí saprofyté, jejichž konidie se snadno šíří v atmosféře. Vyskytují se nejčastěji v půdě a na různém organickém substrátu. *Penicillium olsonii* bylo nalezeno na semenech různých rostlin na Filipínách, Thajvanu a v Indonésii. V letech 2000 a 2001 byl zjištěn výskyt tohoto neobvyklého druhu na čedičové vatě ve skleníku v Lednici na Moravě. Vzorek je uložen v České sbírce mikroorganismů v Brně pod označením CCM 8259.

Klíčová slova: *Penicillium olsonii*; čedičová vata; skleník

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