

European record of *Subramaniula thielavioides* on opium poppy

MARTIN PASTIRČÁK¹ and KATARÍNA PASTIRČÁKOVÁ²

¹Slovak Agricultural Research Centre, Research Institute of Plant Production
Bratislavská cesta 122, SK-92168 Piešťany, uefemapa@hotmail.com

²Slovak Academy of Sciences, Institute of Forest Ecology, Branch of Woody Plants Biology
Akademická 2, SK-94901 Nitra, uefezima@hotmail.com

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In the course of a study of fungal biodiversity of opium poppy (*Papaver somniferum*) plants collected in production area of Slovakia, an ascomycete belonging to the genus *Subramaniula* was isolated. The fungus identified as *Subramaniula thielavioides* has been reported for the first time from Slovakia. This record also represents the first European locality. Brief morphological description of the fungus based on an isolate from flower petals of opium poppy is provided.

Key words: *Subramaniula thielavioides*, *Sordariales*, *Papaver somniferum*, Slovakia

INTRODUCTION

The genus *Subramaniula* Arx (*Chaetomiaceae*, *Sordariales*) includes two species, *Subramaniula irregularis* P.F. Cannon & D. Hawksw. and *S. thielavioides* (Arx, Mukerji & N. Singh) Arx designated as the type species. Morphologically, *Subramaniula thielavioides* differs from *S. irregularis* by much smaller ascospores and irregularly shaped but usually lacrimiform or obovate ascospores. According to Arx (1985), morphological features of *Subramaniula thielavioides* show affinities to some species of *Thielavia* Zopf, *Chaetomium* Kunze and *Podospora* Ces. The genus *Subramaniula* differs from these genera by urniform, pale ascomata with a very wide apical ostiole surrounded by a ring of hyaline cells. Arx et al. (1978) observed non-ostiolate ascomata occasionally. An anamorphic connection is unknown. Only Cannon (1986) observed a few hyphae with chains of considerably swollen cells, producing thin-walled globose or ellipsoidal bodies, probably related to the anamorph.

During survey of fungal mycobiota of opium poppy (*Papaver somniferum* L.) the ascomycete *S. thielavioides* was isolated. *Subramaniula thielavioides* is not included

in the checklist of fungi of Slovakia (Lizoň, Bacigálová 1998). There are no published data on the biology and natural occurrence of this ascomycete in Slovakia and no species of *Subramaniula* have been recorded in the country so far. The species *S. thielavioides* is newly described for Slovakia.

MATERIAL AND METHODS

Flower petals of opium poppy were collected at locality Dvory nad Žitavou (western Slovakia) in June 2006. Fresh material was surface-sterilized by immersion in 80% alcohol for 1 min and 5% commercial bleach solution of sodium hypochlorite SAVO (Bochemie, Bohumín, Czech Republic) for 1 min and plated on SNA agar (Leslie, Summerell 2006) in 90 mm Petri dishes. Petri plates were incubated at 22°C. The morphological features of the fungus sporulating in pure culture were examined by means of standard light microscopy (Jenamed2, Carl Zeiss Jena, Germany). Slide preparations were stained with lactophenol blue solution (Merck, Darmstadt, Germany). The morphological structures (ascocarps, asci and ascospores) were photographically documented by digital camera Olympus CAMEDIA C-4000 ZOOM. Representative material has been deposited in the Mycological Herbarium of Research Institute of Plant Production in Piešťany, Slovakia.

TAXONOMIC DESCRIPTION

Subramaniula thielavioides (Arx, Mukerji & N. Singh) Arx, Proc. Indian Acad. Sci., Pl. Sci. 94 (2-3): 344 (1985).

BASIONYM: *Achaetomium thielavioides* Arx, Mukerji & N. Singh, Persoonia 10 (1): 144 (1978).

The following description is based on a fresh isolate from flower petals of opium poppy. Colonies on SNA agar with hyaline submerged mycelium; aerial mycelium scanty and hyaline; ascomata (perithecia) started appearing on the 10th day of incubation, scattered over or below (into) the agar surface. Ascomata globose, 160–460 µm in diam., without short neck, the collar of thin-walled hyaline cells around the ostiole. Ascomatal hairs absent; narrow hyaline hyphae emanating from various points on the ascoma surface. Periphyses not seen. Asci clavate, short-stalked, very thin-walled, without apical structures, evanescent at a very early stage, 8-spored, 75–96 × 10.5–18 µm. Ascospores widely fusiform, brownish, relatively thick-walled, 20.5–34 × 11.5–19 µm, 1-celled, with a conspicuous subapical germ pore up to 3.5 µm wide (Fig. 1). Anamorph not seen.

SPECIMEN EXAMINED. SLOVAKIA, Dvory nad Žitavou, opium poppy field, 47.9937 N, 18.2678 E, living flower petals of *Papaver somniferum*, 23 Jun 2006, leg. M. Pastirčák.

Biometric data of ascomata and asci containing ascospores in general correspond to those given by Arx et al. (1978), Arx (1985), and Cannon (1986). The measurements of ascomata, asci and ascospores of the Slovak specimen compared with those recorded by previous authors are given in Table 1. On the basis of morphological description and measurements of reproductive structures, the fungus was identified as *Subramaniula thielavioides*.

Table 1
Subramaniula thielavioides: measurements of ascomata, asci and ascospores compared with previous descriptions

Source of data	Ascomata (in diam., μm)	Asci size (μm)	Ascospores size (μm)
Present study (average \pm sd)	330 \pm 92	85 \pm 7.5 \times 13 \pm 2.5	26 \pm 3 \times 14.5 \pm 1.5
Range (min-max)	160-460	75-96 \times 10.5-18	20.5-34 \times 11.5-19
Arx et al. (1978)	150-240	50-78 \times 18-35	21-27 \times 13-16
Arx (1985)	130-200	–	23-27 \times 13-17
Cannon (1986)	130-200 \times 110-160	45-69 \times 18-31	22-26 \times 11.5-14.5

According to Cannon (1986), *Subramaniula thielavioides* is almost certainly no pathogen. Although Arx et al. (1978) includes this species in coprophilous fungi; the fungus was isolated from human nails, vertebrate dung, and soil. Until recently, distribution of this species was known from India (Arx et al. 1978; Arx 1985; Cannon 1986; Arx et al. 1988). Lately, *S. thielavioides* was isolated from biological soil crusts at the Mashash Farm in the Negev desert, Israel (Grishkan et al. 2006). On-line database of the CABI Bioscience UK Centre Herbarium (IMI) includes record of *Subramaniula* sp. isolated from fruit of/associated with *Capsicum* from Pakistan in 1998 (IMI 379385, not seen). The finding of *S. thielavioides* on flower petals of *Papaver somniferum* from Slovakia represents the first record of the species in the country and the first known locality in Europe.

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REFERENCES

- Arx J. A. von 1985. On *Achaetomium* and a new genus *Subramaniula* (Ascomycota). Proc. Indian Acad. Sci. (Plant Sci.) 94 (2–3): 341–345.
- Arx J. A. von, Figueras M. J., Guarro J. 1988. Sordariaceous ascomycetes without ascospore ejaculation. Beih. Nova Hedwigia 94: 1–104.
- Arx J. A. von, Mukerji K. G., Singh N. 1978. A new coprophilous ascomycete from India. Persoonia 10 (1): 144–146.
- Cannon P. F. 1986. A revision of *Achaetomium*, *Achaetomiella* and *Subramaniula*, and some similar species of *Chaetomium*. Trans. Br. Mycol. Soc. 87 (1): 45–76.
- Grishkan I., Zaady E., Nevo E. 2006. Soil crust microfungi along a southward rainfall gradient in desert ecosystems. Eur. J. Soil Biol. 42 (1): 33–42.
- Leslie J.F., Summerell B.A. 2006. The Fusarium laboratory manual. Blackwell publishing, Iowa, USA.
- Lizoň P., Bacigálová K. 1998. Fungi. (In:) K. Marhold, F. Hindák (eds). Checklist of non-vascular and vascular plants of Slovakia. 1 ed., Veda, Bratislava: 101–227.

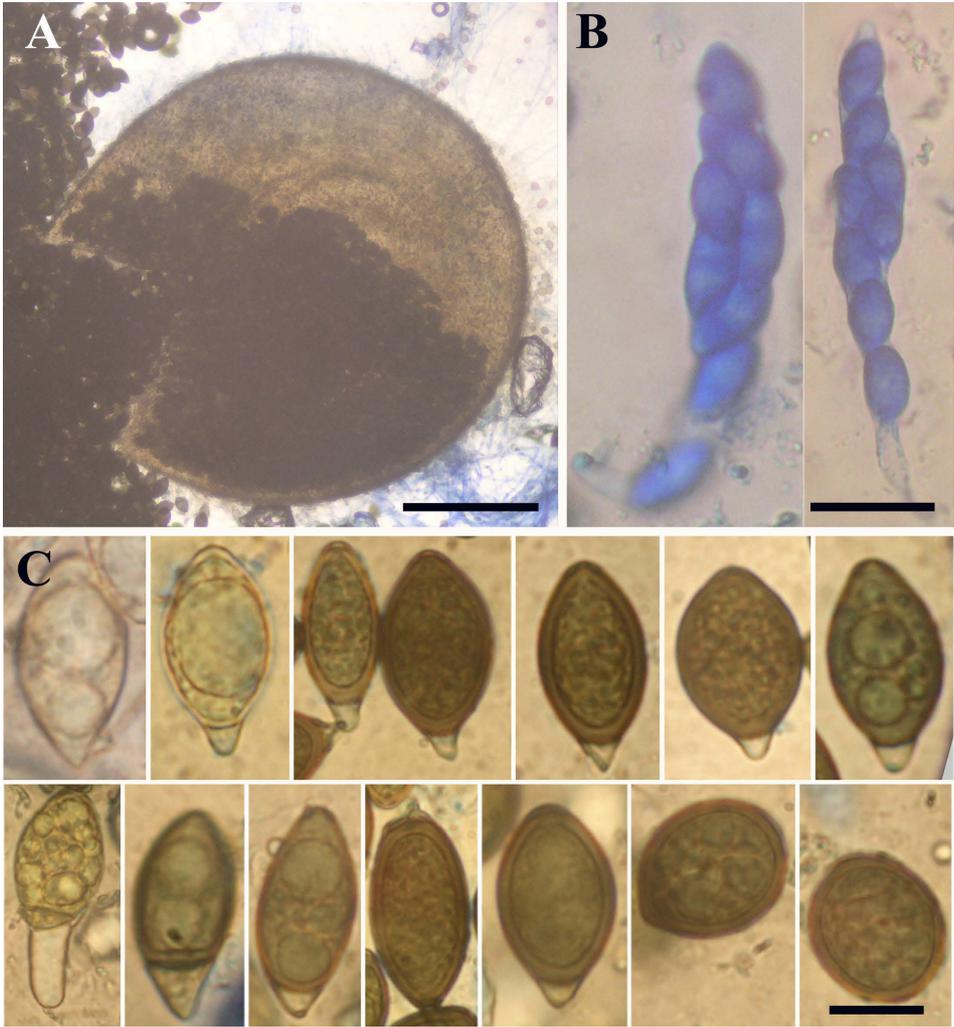


Fig. 1. *Subramaniula thielavioides*: A – globose ascoma, scale bar: 100 μm ; B – asci with ascospores, scale bar: 20 μm ; C – ascospores, scale bar: 15 μm .