

Taphrina viridis – a new species for the Karpаты Mts.

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Taphrina viridis Maire was found for the first time in the Západné Tatry Mts. (Karpаты Mts.) on *Duschekia alnobetula* (Ehrh.) Pouzar, (syn. *Alnus viridis* (Chaix) DC.). The author presents some new biological data on the mentioned fungus and ecological characteristics of its habitat.

Key words: *Taphrina viridis*, *Duschekia alnobetula* (= *Alnus viridis*), biology, ecology, Karpаты Mts., Slovakia

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Taphrina viridis Maire bola zistená na Slovensku v Západných Tatrách na lokalite v Kamenistej doline, na živých listoch *Duschekia alnobetula* (Ehrh.) Pouzar, (= *Alnus viridis* (Chaix) DC.). Ide o prvý nález uvedenej huby v Karpátoch. Autorka prezentuje nové poznatky z oblasti biológie tejto fytopatogénnej huby a ekologickú charakteristiku lokality jej výskytu.

During the years 1988-1993 mycofloristic research on the genus *Taphrina* and its host plants in the National Park of the High Tatra Mts. in Slovakia was carried out. The symptoms of *Taphrina viridis* infections were observed on leaves of the rarely occurring shrub *Duschekia alnobetula* (Ehrh.) Pouzar, syn. *Alnus viridis* (Chaix) DC. It was the first record of the fungus in Slovakia as well as in the Karpаты Mts.

Taphrina viridis Maire, Bull. Soc. Bot. Fr., ser. 4.10: CLXVII. 1910.

Symptoms. The fungus causes several rounded, variously large spots on leaves of its host plants, which often occupy half of the leaf area (Fig. 1). The infected parts of the leaves are pale green or yellowish, in the period of asci maturing they are greyish, and later turn into brown, become dry and remain on the leaves (Fig. 1).

Anatomical-morphological characteristic of the fungus. Thin cross sections were made of blades from naturally infected leaves and observed in a drop of 50% lactic acid. Observations were carried out with the help of an Amplival microscope with microphotographic equipment.

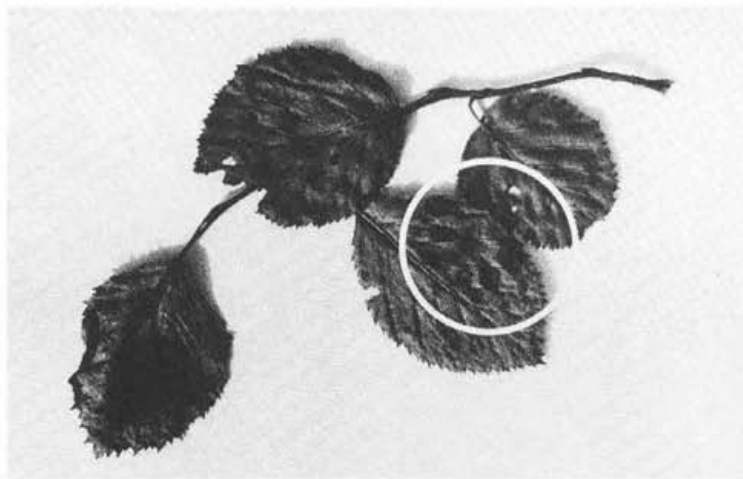


Fig. 1 Pale green spots on leaves of *Duschekia alnobetula* caused by *Taphrina viridis*.

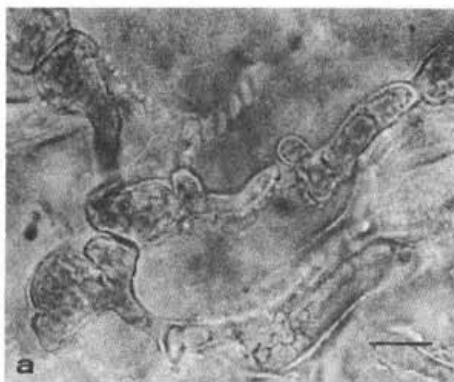


Fig. 2a Various stages of mycelium cells in the subcuticular leaf layer (yeast-like cells, cells of fine fibrous mycelium, early stages of developing ascogenous cells), 10 μ m



Fig. 2b The fibrous subcuticular hyphae connect ascogenous cells, 10 μ m

The vegetative phase of the fungus is characterized by yeast-like cells, which form chain-like colonies beneath the leaf cuticle (Fig. 2a). The mycelium has an irregular form. The mycelium cells are elongated, divided or partitioned by layered septa which appear to be composed of several bands of wall material. The cytoplasm of the young cells is dense, but becomes granulated and vacuolated as the cells develop into ascogenous cells. Occasionally the cells of mycelium branch, but do not form such extensive mycelium as formed by some of the other *Taphrina* species. The size of the cells vary depending on intercellular spaces of the host parenchyma. In the

subcuticular leaf layer, the mycelial cells become thickened and round, and thick-walled ascogenous cells are formed. During their further development the cuticle is ruptured and ascogenous cells increase in size and form asci (Fig. 3b).

The asci are amphigenous, cylindrical or ellipsoidal-oblong, rounded or truncate at the top, on average $23\text{-}33 \times 11\text{-}16 \mu\text{m}$, but most frequently $26\text{-}30 \times 13\text{-}15 \mu\text{m}$. The stalk cells are rounded, on average $8\text{-}22 \times 15\text{-}25 \mu\text{m}$, but most frequently $16 \times 16 \mu\text{m}$. The asci have eight ascospores. They are globoid or oval, $4.5\text{-}6 \times 5\text{-}6 \mu\text{m}$ (Fig. 3b).

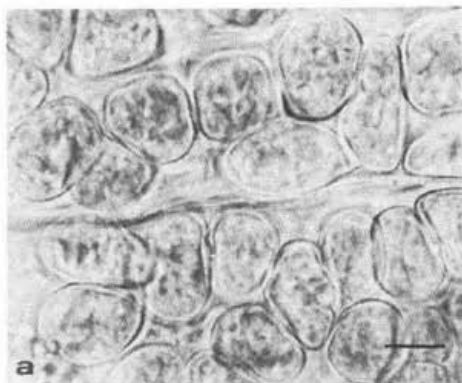


Fig. 3a Ascogenous cells situated in a vascular bundle beneath the cuticle, $10 \mu\text{m}$

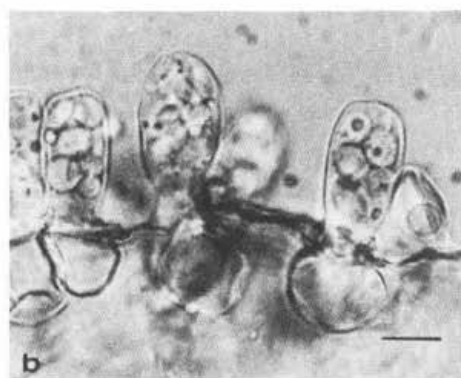


Fig. 3b Ascogenous cells situated in a vascular bundle beneath the cuticle, $10 \mu\text{m}$

Locations. Slovakia, Západné Tatry Mts., Kamenistá dolina Valley near Kamenistý potok Brook, 1200-1250 m a.s.l. on living leaves of *Duschekia alnobetula*, 6.9.1988, 9.8.1993 leg. et det. Bacigálová, (SAV).

The symptoms of *T. viridis* on *Duschekia alnobetula* are similar to *T. sadebeckii* on *Alnus glutinosa* (L.) Gaertn., but anatomical and morphological features of the fungus are different. *Taphrina viridis* is characterized by smaller asci and stalk cells in the subcuticular layer of the host leaves, in agreement with collected specimens and with the characteristic of *T. viridis* as recorded by Mix (1949) and Salata (1974). The vegetative and generative phase of the life cycle of this fungus is very similar to the group of *Taphrina* represented by *T. virginica* Sadebeck. (Kramer 1960).

Herbarium and literature items suggest a rare occurrence of *T. viridis* in Europe. This fact might also be explained by the limited occurrence of its host plants (*Duschekia alnobetula*) in valleys of the southeastern Karpaty Mts., (Dostál et Červenka 1991). The Slovakian locations of *D. alnobetula* are not autochthonous,

as it is in the case of the High Tatra Mts. locations, where *D. alnobetula* was planted (Dr. A. Šoltésová, Tatra National Park, personal communication).

The location of the fungus is situated in a valley in the montane belt (1200 – 1250 m a.s.l.) with numerous shrubs of the host plant near a brook and near a touristic path. This fact leads us to draw the conclusion that also tourism helps spreading this fungus. We suppose that the mentioned fungus may also be distributed in some other sites in our territory, not researched so far. It is remarkable that *T. viridis* was not found in Poland (Salata 1974) and other countries of Northern Europe.

A c k n o w l e d g e m e n t s

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REFERENCES

- DOSTÁL J. and ČERVENKA M. (1991): Velký klíč na určování vyšších rostlin I. – 775 p., SPN Bratislava.
- KRAMER C. L. (1960): Morphological development and nuclear behavior in the genus *Taphrina*. – *Mycologia* 52: 259-320.
- MIX A. J. (1949): A monograph of the genus *Taphrina*. – *Univ. Kans. Sci. Bull.* 33: 3-167.
- SALATA B. (1974): Grzyby, Tom 6. Spetkowe-Taphrinales. – 87 p., PWN Warszawa-Krakow.