



V.P. HELUTA

M.G. Kholodny Institute of Botany of the National Academy of Sciences of Ukraine
2 Tereshchenkivska Str., Kyiv, 01601, Ukraine
vheluta@botany.kiev.ua

ERYSIPHE DUDKAE SP. NOV., A NEW SPECIES OF POWDERY MILDEWS ON *BRUGMANSIA SUAVEOLENS* (SOLANACEAE) FROM MONTENEGRO

Key words: Erysiphales, Microsphaera, Europe.

Abstract

A new species, *Erysiphe dudkae* V.P. Heluta, sp. nov. (Ascomycota, Erysiphales), on *Brugmansia suaveolens* (Humb. et Bonpl. ex Willd.) Bercht. et J. Presl (Solanaceae) is described. The fungus was collected by Irina O. Dudka in 2013 in Montenegro in two localities. It belongs to the section *Microsphaera* (Lév.) U. Braun et Shishkoff. Morphologically, *E. dudkae* is very similar to *E. ornata* var. *europaea* (U. Braun) U. Braun et S. Takam. parasitizing birch, but differs from it primarily by the shape of appendages. In *E. dudkae*, appendages are horizontal or slightly raised, with straight or somewhat curved stalks, while in *E. ornata* var. *europaea* stalks are very curved, so that appendages are almost vertical.

The genus *Brugmansia* Pers. (Solanaceae) comprises five ornamental species and a few their hybrids native to South America (USDA, 2014). They are trees or shrubs with semilignified branches and large attractive flowers. All species of *Brugmansia* are listed as Extinct in the Wild by the IUCN Red List (IUCN, 2014). Some of them, including *B. suaveolens* (Humb. et Bonpl. ex Willd.) Bercht. et J. Presl, are cultivated in Europe, being grown in open ground in regions with mild frost-free winters. Up to now, a number of powdery mildew fungi (order Erysiphales) belonging to six holomorphic genera, has been known on representatives of the family Solanaceae. These species are: *Arthrocladiella mougeotii* (Lév.) Vassilkov, *Erysiphe* (*Uncinula*) *jaborosae* (Seaver) U. Braun et S. Takam., *Golovinomyces hyoscyami* (R.Y. Zheng et G.Q. Chen) V.P. Heluta, *G. orontii* (Castagne) V.P. Heluta, *Leveillula taurica* s.l., *Phyllactinia chubutiana* Havryl., S. Takam. et U. Braun, *Podosphaera* (*Sphaerotheca*) *solanacearum* U. Braun, and *P. (S.) xanthii* (Castagne) U. Braun

© V.P. HELUTA, 2014

et Shishkoff. Anamorphic species, such as *Euodium longipes* (Noordel. et Loer.) U. Braun et R. T.A. Cook, *E. lycopersici* (Cooke et Masee) U. Braun et R.T.A. Cook, *Pseudoidium neolycopersici* (L. Kiss) L. Kiss, and *Striatoidium jaborosae* M.G. Cabrera et U. Braun, can affect solanaceous plants (Braun, Cook, 2012). However, none of these species of powdery mildews was recorded on the *Brugmansia* representatives (Amano, 1966; Braun, Cook, 2012).

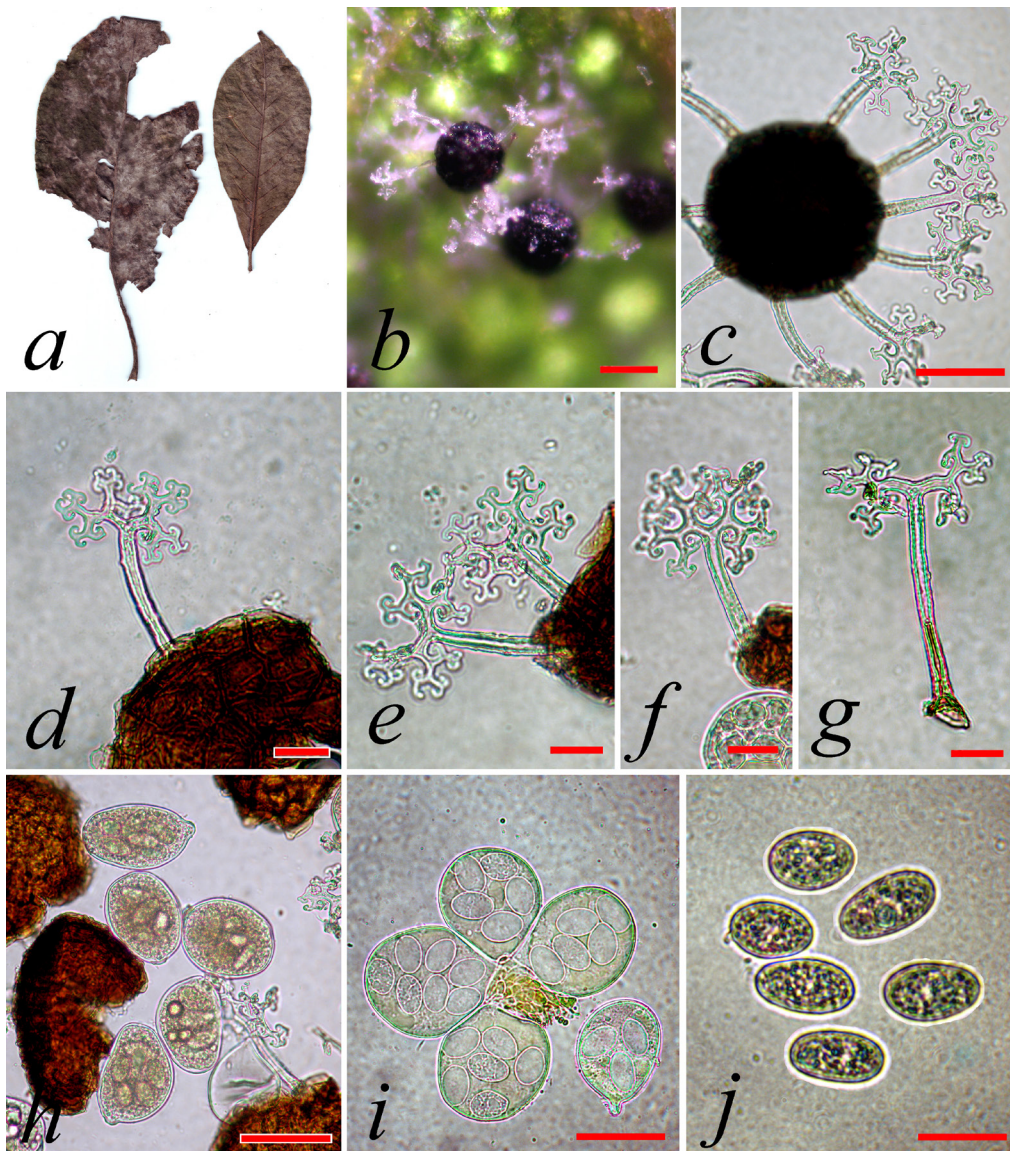
In October 2013, two specimens of *Brugmansia suaveolens* affected by powdery mildew were collected by the Ukrainian mycologist Irina O. Dudka in Montenegro. The microscopic examination of these samples showed that in both cases the plant is infected by the same fungus, which belongs to the section *Microsphaera* (Lév.) U. Braun et Shishkoff of the genus *Erysiphe* R. Hedw. ex DC. It should be emphasized that powdery mildew fungi of this section on host plants of the Solanaceae family have not been previously reported. An attempt to identify this fungus with a key provided in the monograph by U. Braun and R.T.A. Cook (2012) was unsuccessful. As our material has fruiting bodies with short appendages (0.6–1 times the chasmothecial diam.) characterized by apices with distinctly curved tips, we have concluded that we are dealing with a new species, morphologically close to *E. ornata* var. *europaea* (U. Braun) U. Braun et S. Takam. parasitizing *Betula* species. Below is a description of the new species.

Erysiphe dudkae V.P. Heluta, sp. nov. (Figure)

Mycobank No.: MB 811148

Etym.: *dudkae*, in honour of the famous Ukrainian mycologist Irina O. Dudka.

Anamorph: absent.



Erysiphe dudkae sp. nov.: a – leaves of the host plant affected by the fungus, b – chasmothecia as viewed under the dissecting microscope in reflected light, c – fruiting body, d – peridium piece and appendage, e–g – appendages, h–i – asci (i – strongly flattened by a microglass), j – ascospores (bars: b – 100 μm , c, h, i – 50 μm , d, e, f, g, j – 20 μm)

Description. *Mycelium* amphigenous, thin, greyish or in patches, white, sometimes on petioles. *Chasmothecia* mainly scattered, hemispherical, depressed in the lower part, 83–118(–128) μm diam. *Peridium cells* obscure, irregularly polygonal, 13–24 \times 12–19 μm . *Appendages* 6–10, sometimes up to 15, more or less equatorial, stiff or somewhat arcuate, 0.6–1 times the chasmothecial diam., 9–11 μm wide below, occasionally more or less abruptly thickened, 0–1-septate, hyaline or slightly pigmented at the base, apices not flat, (3–)4–5(–6) times

more or less densely dichotomously branched, sometimes the primary branches elongated, tips recurved. *Asci* 4–5(–6) per chasmothecium, ellipsoid-ovoid, saccate, 50–68 \times 33–48 μm , sessile or short stalked, (4–)5–6-spored, very rarely 3- or 7-spored. *Ascospores* ellipsoid-ovoid, 19–24 \times 11–14 μm , colourless.

The species is similar to *Erysiphe ornata* var. *europaea* (U. Braun) U. Braun et S. Takam. but differs mainly by having distinct form of appendages and the host plant.

Comparative study of some characteristics of *Erysiphe dudkae* sp. nov. and *E. ornata* var. *europaea*

| Characteristic | <i>E. dudkae</i> | <i>E. ornata</i> var. <i>europaea</i> (Braun, Cook, 2012) |
|--------------------------------------|---------------------------|---|
| Chasmothecial diam. (µm) | 83–118(–128) | 75–105 |
| Appendage number per chasmothecium | 6–10(–14) | 4–10(–13) |
| Number of branches of appendage apex | (3–)4–5(–6) | 3–5 |
| Number of asci in chasmothecium | 4–5(–6) | 2–6 |
| Ascus size (µm) | 50–68 × 33–48 | 40–65 × 30–45 |
| Number of spores in ascus | (4–)5–6, very rare 3 or 7 | 4–7 |
| Spore size (µm) | 19–24 × 11–14 | 16–22 × 9–15 |

Holotype: Montenegro, Herceg Novi, shore of the Adriatic Sea, Villa Alexander, on *Brugmansia suaveolens* (Humb. et Bonpl. ex Willd.) Bercht. et J. Presl (*Solanaceae*), 12 Oct. 2013, I.O. Dudka (KW 60481F).

Additional material studied (paratype): Montenegro, Tivat, city Park, on *Brugmansia suaveolens*, 5 Oct. 2013, I.O. Dudka (KW 60482 F).

Comparison of the main features of *E. dudkae* and *E. ornata* var. *europaea* (Table) shows that both species are morphologically very similar and differ only in minor details. Thus, the former has larger fruiting bodies and spores as well as longer asci. However, the major difference is that appendages of *E. dudkae* extend from the fruiting body more or less horizontally or are slightly raised above the surface of the leaf, whereas in *E. ornata* var. *europaea* appendages are arcuate, so that they are almost vertical. We also have to take into account the fact that these morphologically similar fungi are parasitizing phylogenetically very distant host plants.

Acknowledgements. *The author is grateful to Prof. I.O. Dudka for kindly providing of specimens of B. suaveolens leaves infected with powdery mildew. The author also thanks Dr. Vira Hayova for help with the English and valuable comments on the manuscript.*

REFERENCES

Amano K. Host range and geographical distribution of the powdery mildew fungi. – Tokyo: Japan Scientific Societies Press, 1986. – 741 p.
 Braun U., Cook R.T.A. Taxonomic manual of the *Erysiphales* (powdery mildews) // CBS Biodiversity Series 11. – 2012. – P. 1–707.
 IUCN 2014. The IUCN Red List of Threatened Species. Version 2014.3. <http://www.iucnredlist.org> (16 December 2014).
 USDA, ARS, National Genetic Resources Program. *Germplasm Resources Information Network – (GRIN)* [Online Database]. National Germplasm Resources Laboratory, Beltsville, Maryland. URL: <http://www.ars-grin.gov/cgi-bin/npgs/html/splist.pl?13739> (09 December 2014).

Recommended by
V.P. Hayova

Submitted 18.12.2014

В.П. Гелюта

Інститут ботаніки ім. М.Г. Холодного НАН України, м. Київ

ERYSIPHE DUDKAE SP. NOV. – НОВИЙ ВИД БОРОШНИСТОРОСЯНИХ ГРИБІВ НА *BRUGMANSIA SUAVEOLENS* (*SOLANACEAE*) З ЧОРНОГОРІЇ

Описується новий для науки вид *Erysiphe dudkae* V.P. Heluta, sp. nov. (*Ascomycota*, *Erysiphales*), що розвивається на *Brugmansia suaveolens* (Humb. et Bonpl. ex Willd.) Bercht. et J. Presl (*Solanaceae*). Він знайдений І.О. Дудкою в 2013 р. в Чорногорії у двох локалітетах. Гриб належить до секції *Microsphaera* (Lév.) U. Braun et Shishkoff. Морфологічно *E. dudkae* дуже близький до *E. ornata* var. *europaea* (U. Braun) U. Braun et S. Takam. – паразита представників роду *Betula* L., однак відрізняється від нього насамперед формою придатків. У *E. dudkae* вони горизонтальні чи дещо піднімаються, з прямими або ж слабо зігнутими стержнями, тимчасом як у *E. ornata* var. *europaea* придатки мають дуже зігнутий стержень, унаслідок чого вони майже вертикальні.

Ключові слова: Erysiphales, Microsphaera, Європа

В.П. Гелюта

Інститут ботаніки ім. Н.Г. Холодного НАН України, г. Киев

ERYSIPHE DUDKAE SP. NOV. – НОВИЙ ВИД МУЧНИСТОРОСЯНИХ ГРИБІВ НА *BRUGMANSIA SUAVEOLENS* (*SOLANACEAE*) ИЗ ЧЕРНОГОРИИ

Описывается новый для науки вид *Erysiphe dudkae* V.P. Heluta, sp. nov. (*Ascomycota*, *Erysiphales*), который развивается на *Brugmansia suaveolens* (Humb. et Bonpl. ex Willd.) Bercht. et J. Presl (*Solanaceae*). Он найден И.А. Дудкой в 2013 г. в Черногории в двух локалитетах. Гриб принадлежит к секции *Microsphaera* (Lév.) U. Braun et Shishkoff. Морфологически *E. dudkae* очень близкий к *E. ornata* var. *europaea* (U. Braun) U. Braun et S. Takam. – паразиту представителей рода *Betula* L., однако отличается от него прежде всего формой придатков. У *E. dudkae* они горизонтальные или же несколько приподнимающиеся, с прямыми или же слабо согнутыми стержнями, в то время как у *E. ornata* var. *europaea* придатки имеют сильно согнутый стержень, вследствие чего они почти вертикальные.

Ключевые слова: Erysiphales, Microsphaera, Европа