New and Unusual Report

Powdery Mildew *Phyllactinia corni* Causing Disease on *Cornus mas* (*Cornaceae*) – a New Record for Slovakia

Kamila BACIGÁLOVÁ[1], Dezider TÓTH[2] and Ján BRINDZA[2]

[1]Institute of Botany, Slovak Academy of Sciences, Bratislava, Slovak Republic;
[2]Department of Genetics and Plant Breeding, Faculty of Agrobiology and Food Resources, Slovak Agricultural University in Nitra, Nitra, Slovak Republic

Abstract

Bacigálová K., Tóth D., Brindza J. (2005): **Powdery mildew** *Phyllactinia corni* **causing disease on** *Cornus mas* (*Cornaceae*) **– a new record for Slovakia**. Plant Protect. Sci., **41**: 90–93.

Phyllactinia corni, a powdery mildew on *Cornus mas,* is reported for the first time from Slovakia. The conidial state and mature cleistothecia found at two locations in Slovakia are described and illustrated.

Keywords: *Cornus mas*; *Phyllactinia corni*; *Phyllactinia guttata*; powdery mildew

Phyllactinia corni is one of 30 species of the genus *Phyllactinia* Lév. parasitising mostly woody plants, and characterised by having very large cleistothecia with acicular appendages.

The most common species of these powdery mildews is *P. guttata* (Wallr.: Fr.) Lév., occurring on hosts of various genera of numerous plant families (Ellis & Ellis 1987; Farr *et al*. 1989; Braun 1995). In Slovak territory the fungus has been recorded on *Aceraceae* (*Acer platanoides*), *Betulaceae* (*Betula pendula, B. pubescens, Alnus incana*), *Corylaceae* (*Corylus avellana*, *Carpinus betulus*), *Fagaceae* (*Fagus sylvatica*, *Castanea sativa*) and *Ulmaceae* (*Ulmus minor*) (Bäumler 1887; Paulech 1995). Until recently, the fungus had not been found on species of the *Cornaceae* (*Cornus mas, Cornus sanguinea),* though it had been reported from other European countries (Braun 1995). However, two years ago and in the garden of the Institute of Botany at Bratislava, Slovakia, leaves of *Cornus mas* L. were unexpectedly found to be strongly infected by *Phyllactinia sp.* The fungus was obviously different from another powdery mildew, *Microsphaera tortilis* (Wallr.: Fr.) Speer, which is often recorded on this host in Slovakia (Paulech 1995) and other European countries (Sałata 1985; Braun 1987, 1995). This latter species has no bulbous appendages and its asci have three to six spores, whereas in the collections from *Cornus mas* the ascoma have bulbous appendages and asci with two spores. The identity of the new *Phyllactinia* species was also confirmed by comparison with specimens of fungi from *Betula pendula*, *Corylus avellana*,

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Fagus sylvatica collected at various locations in Slovakia as *Phyllactinia guttata* (SAV). Most species of the genus *Phyllactinia* have been described without the corresponding anamorphic state. We were able to study both anamorphic and ascomata states and found that the species on *Cornus mas* corresponds with species *Phyllactinia corni* on *Cornus officinalis* (Shin 2000).

This is the first record and documented proof of *Phyllactinia corni* from *Cornus mas* in Slovakia. The studied material has been deposited at the Mycological Herbarium of the Institute of Botany (SAV) in Bratislava.

The infected leaves of *Cornus mas* were taken to the laboratory and the fungus was carefully studied under light microscopy with microphotocamera. Microscopic measurements were made from slide preparations stained with cotton blue in 50% lactic acid. For conidia, cleistothecia and asci with ascospores, 30 spores were measured following the recommendation by Parmasto and Parmasto (1987).

Phyllactinia corni H.D. Shin & Y. J. La in Shin (2000)

Syn.: *Phyllactinia guttata* (Wall.: Fr.) Lév. in Braun (1995)

Anamorphic state of *Ovulariopsis* type. Mycelium on leaves hypophyllous, forming thinly effused patches or covering the lower leaf surface (Figure 1). Hyphae are substraight to somewhat wavy, variable in length (30–70/60–110 µm), 4–8 µm wide, mostly branching at a right angle, with a septum near the branching point. Appressoria are variable in morphology, opposite in pairs or in sequences, less frequently single and shortly branched (Figure 2A). Conidiophores single on a hyphal cell, arising from the upper part of creeping hyphae, position mostly central, 50–250 µm long, 8 µm wide, straight in a foot-cells, producing conidia singly followed by 2–3 cells, with a basal septum less than 10 µm away from the branching point of the mycelium (Figures 2 B–C). Conidia clavate, papillate and non-papillate at the apex 58–80 × 16–22 µm, olivaceous to subhyaline, sometimes containing small oil drops, producing germ tubes on the basal side, but occasionally on the median and upper side. Germ tubes are 5 µm wide and occasionally 450 µm and longer (Figures 2D–F).

Figure 1. *Phyllactinia corni* – symptoms on leaves of *Cornus mas*

Cleistothecia scattered 190–264 µm in diameter, blackish brown, wall-cells irregularly polygonal to subrounded. Appendages 7–16 in number arising around the equatorial zone of the cleistothecium, 1.2–1.5 times as long as cleistothecia diameter, bulbous at the base (Figure 3A). Penicillate cells crowded on the upper part of the ascoma, 50–90 µm long, stems 16–25 µm wide often divided into several branches at the upper portion, filaments similar to stems in length 16–32 µm (Figure 3B).

Asci 11–18 per cleistothecium, 2-spored, 53–89 × 32–35 µm, stalked or shortly bifurcate (Figure 3C). Ascospores ellipsoid-ovoid, hyaline to olivaceous 32–39 × 16–20 µm (Figure 3D).

Specimens on *Cornus mas* **examined**: Slovakia, Devínska Kobyla, Bratislava, in the garden of the

Table 1. Microscopic measurements of *Phyllactinia corni* on *Cornus* sp. according to various authors and of the Slovakian material examined (µm)

	Conidia	Cleistothecia	Asci	Ascospores
Braun (1995) as *Ph. guttata*	40–90 × (10–)15–25	150–250 (280)	6–30 60–100 × 25–40	2–(3) 25–45 × 14–25
Shin (2000) as *Ph. corni*	50–95 × 17–28	160–224	10–18 58–90 × 30–42	2 31–39 × 16–23
Slovakian material	58–80 × 16–22	198–264	10–16 53–89 × 32–35	2 29–39 × 16–19

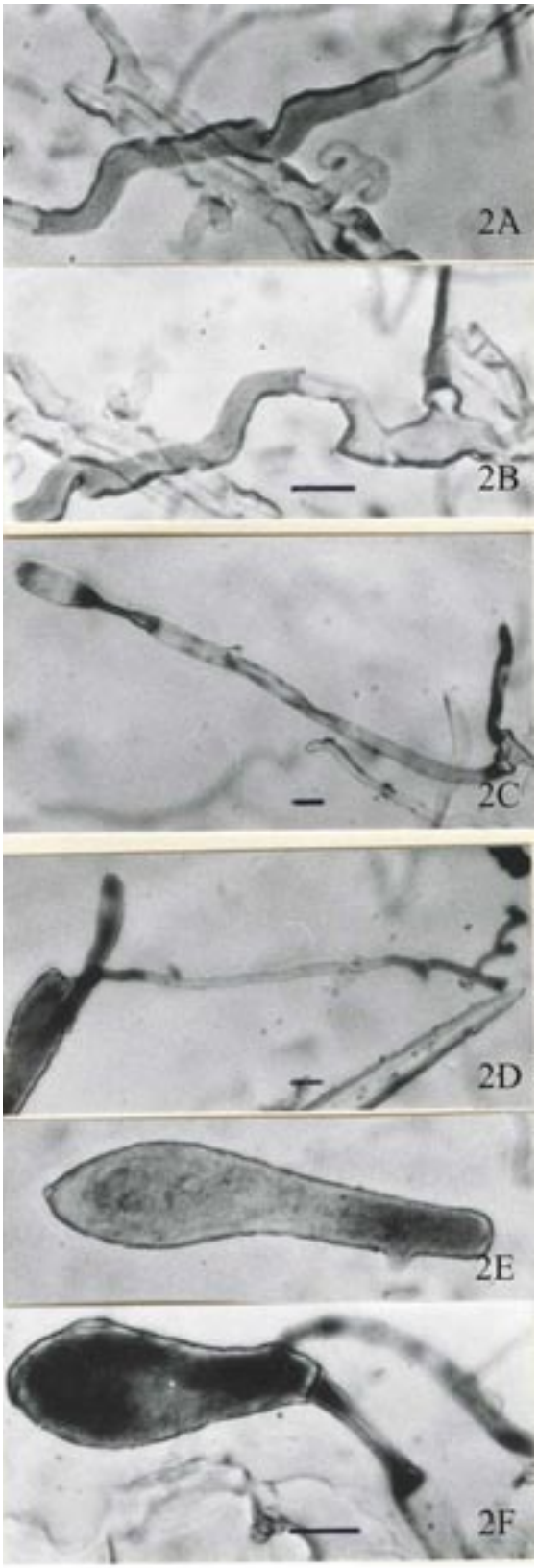

Figure 2. A– Mycelium with appressoria; B – Creeping hyphae with foot-cell and basal septum of conidiophores; C – Conidiophores; D, E, F – Conidium producing germ tube on the upper and basal side; bar = 10 μm

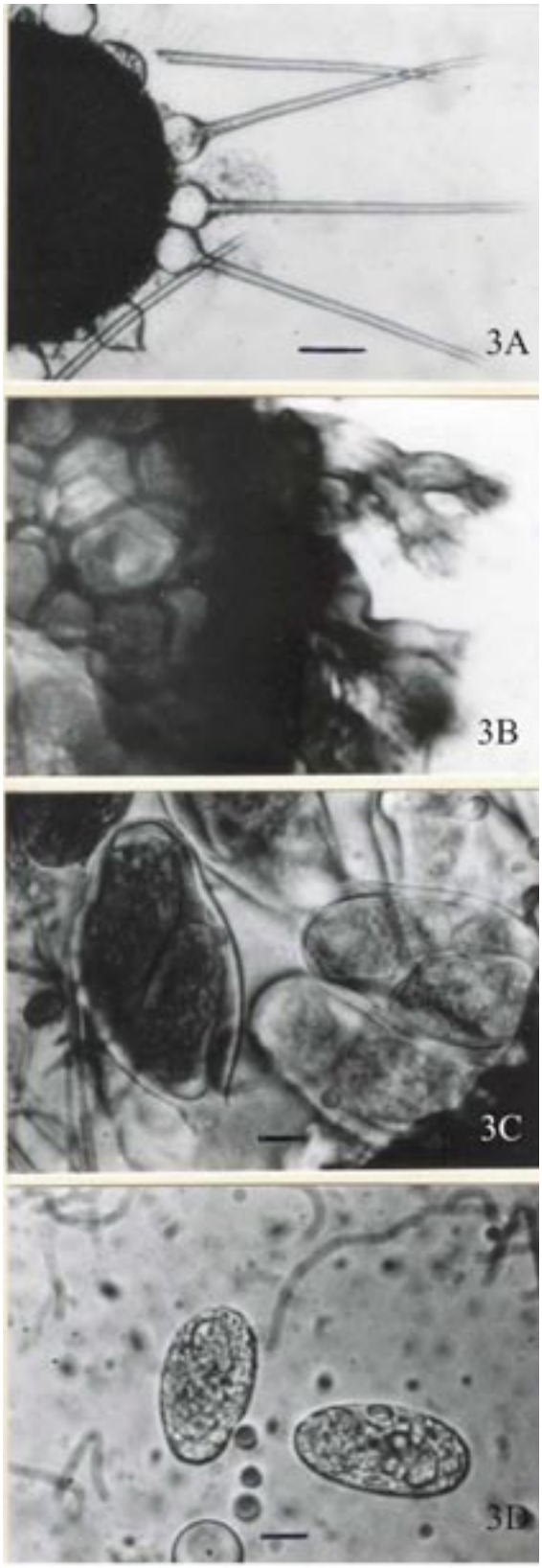

Figure 3. A – Cleistothecium with bulbous appendages; B – Part of cleistothecium wall-cells and penicillate cells; C – Asci with ascospores; D – Ascospores; bar = 10 μm

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Other specimens examined: on *Cornus sanguinea* syn. *Swida sanguinea* (BRA); on *Corylus avellana* L.: Slovakia, Devínska Kobyla, Devínska Nová Ves, 1981, leg. C. Paulech (SAV); on *Fagus sylvatica* L.: Slovakia, Malé Karpaty Mts., Biely Kríž, leg. C. Paulech (SAV); on *Betula pendula* Roth.: Slovakia, Slovenské rudohorie Mts., leg. C. Paulech (SAV).

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Abstrakt

Bacigálová K., Tóth D., Brindza J. (2005): *Phyllactinia corni* – **nový druh múčnatky na** *Cornus mas* (*Cornaceae*) **na Slovensku**. Plant Protect. Sci., **41**: 90–93.

Prvýkrát je opísané, zdokumentované a ilustrované anamorfné aj teleomorfné štádium nového druhu múčnatky *Phyllactinia corni* na drienke obyčajnej (*Cornus mas*) na dvoch lokalitách na Slovensku.

Kľúčové slová: drienka obyčajná (*Cornus mas*); *Phyllactinia corni*; *Phyllactinia guttata*; múčnatka liesková; múčnatka drienková

Corresponding author:

RNDr. Kamila Bacigálová, CSc., Slovenská akadémia vied, Botanický ústav, Dúbravská cesta 14, 845 23 Bratislava 4, Slovenská republika
tel.: + 421 2 594 261 18 , fax: + 421 2 547 719 48, e-mail: kamila.bacigalova@savba.sk