

SHORT COMMUNICATION

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Erysiphe patagoniaca: a new species of *Erysiphe* sect. *Uncinula* from Patagonia, Argentina

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Abstract A new species of *Erysiphe* sect. *Uncinula* is described and illustrated from Patagonia, Argentina. *Erysiphe patagoniaca* sp. nov., found on leaves of *Nothofagus* × *antarctica*, is similar to *E. nothofagi* and *E. kenjiana*, but differs in its appendages being twisted throughout their length and the number of appendages, asci, and ascospores. The two endemic species of *Erysiphe* sect. *Uncinula*, *E. magellanica* and *E. nothofagi*, coexisted on the same leaves together with *Erysiphe patagoniaca*.

Key words Erysiphaceae · *Erysiphe magellanica* · *Erysiphe nothofagi* · *Nothofagus* · Powdery mildew

In the Andean-Patagonian area from Argentina to Chile, there are two known endemic species of *Erysiphe* sect. *Uncinula* (formerly *Uncinula*) with uncinated appendages restricted to the family Nothofagaceae as host plants: *E. nothofagi* (Thaxt.) U. Braun & S. Takamatsu (Fig. 1) and *E. magellanica* (Thaxt.) U. Braun & S. Takamatsu (Fig. 2). Although *E. nothofagi* parasitizes four cadoucifolious *Nothofagus* species [*N. antarctica* (G. Forst.) Oersted, *N. nervosa* (Phil.) Dimitri & Milano, *N. obliqua* (Mirb.) Oersted, and *N. pumilio* (Poepp. & Endl.) Krasser], *E. magellanica* parasitizes only *N. antarctica* (Braun 1987; Havrylenko 1995). These two powdery mildew species differ from one another in conspicuous morphological characters such as the presence of spirally twisted appendages in *E. nothofagi* and flexuous, not coiled, appendages in *E. magellanica*.

In this article, we describe and illustrate a new species, *Erysiphe patagoniaca* on *Nothofagus* × *antarctica*, found in Patagonia, Argentina.

Erysiphe patagoniaca Havrylenko & S. Takamatsu, sp. nov. Figs. 3, 4

Mycelium amphigenum, plerumque epiphyllum, tenue, hyalinum, 3–5 μm latum. Appressoria mammiformia vel lobulata, solitaria vel opposita. Conidiophora erecta, et cellula basali cylindraceis et 2 cellulis sequentibus aequilongis composita. Conidia solitaria, continua, ellipsoidea vel cylindrica, hyalina, (12–)18–29(–30) × 8–11(–12) μm. Ascomata gregaria, globosa, 80–100(–120) μm diameter, ad maturitatem fuscobrunnea. Cellulae peridii irregulariter angulatae, 11–25 μm diameter. Appendices aequatoriales, hyalinae, ad basim uniseptatae, 8–16 per ascoma, dense helicoideae ex 15–25 convolutis, ad apicem dilatatae et uncinatae. Asci ovaes, curtistipitati, 8 in quoque ascomate, 60–69 × 27–34 μm, 8-spori. Ascosporeae ellipsoideae, hyalinae, 16–21 × 9–12 μm.

Holotypus: In foliis vivis *Nothofagi* × *antarcticae*. Argentina, Provincia del Neuquén, Parque Nacional Lanin, near the east shore of Espejo Chico lake. Leg. M. Havrylenko and S. Takamatsu, Apr. 23, 2001 (BCRU 4337).

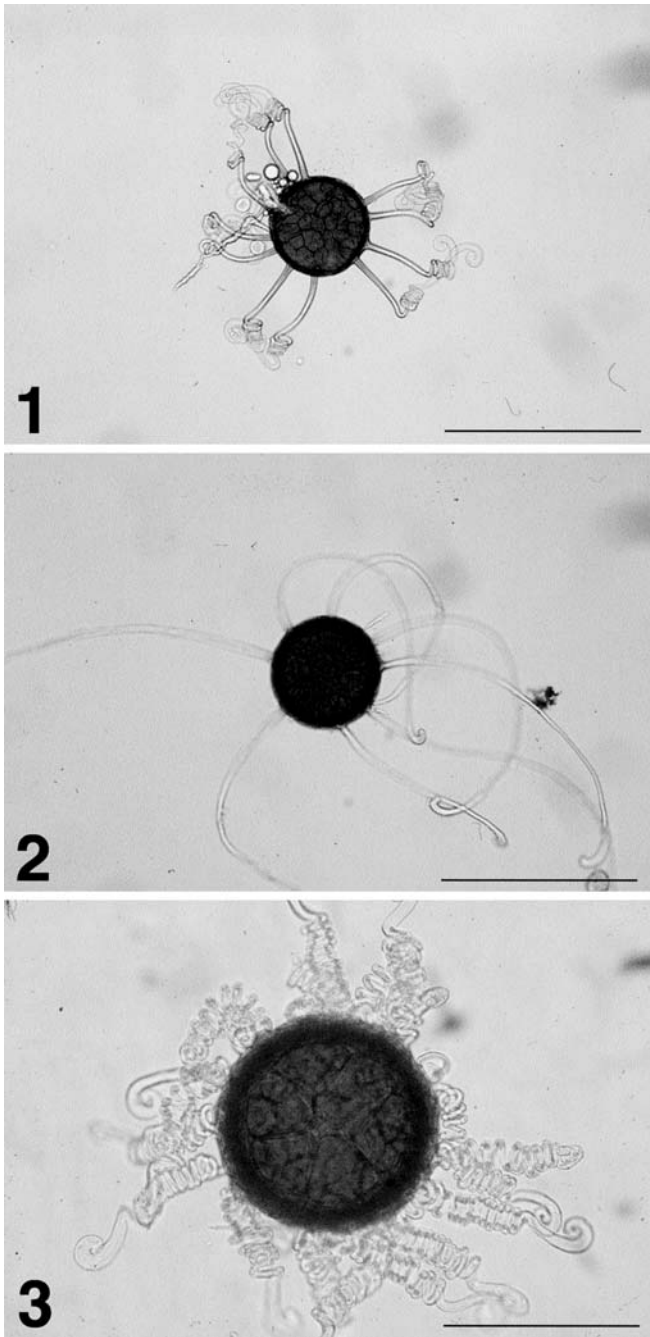
Colonies: Mycelia on leaves amphigenous, mostly epiphyllous, hyaline, thin, evanescent. Vegetative hyphae 3–6 μm wide. Appressoria nipple shaped or multilobed single or opposite in pairs.

Anamorph: *Oidium* subgenus *Pseudoidium* Jacz. Conidiophores erect. Foot cells straight cylindrical, followed by two cells of the same length. Conidia ellipsoidal to cylindrical, (12–)18–29(–30) × 8–11(–12) μm. Germination: one apical germ tube with lobulated end.

Teleomorph: Ascomata gregarious, globose, 80–100 (–120) μm diameter. Peridial cells irregular in shape, mostly polygonal 11–25 μm diameter. Appendages 8–16, equatorially inserted, 2.5–3.5 μm wide at the very base, flexuous, smooth, hyaline, spirally twisted, at least with 15–25 coils, tips enlarged and uncinata. Asci 8, shortly stalked, 60–69 × 27–34 μm, 8-spored. Ascospores hyaline, ellipsoid, 16–21 × 9–12 μm.

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Figs. 1–3. Ascomata of *Erysiphe* spp. (sect. *Uncinula*) reported on *Nothofagus*. **1** *E. nothofagi*. **2** *E. magellanica*. **3** *E. patagoniaca*. Bars **1,2** 200 μm ; **3** 100 μm

Host: *Nothofagus* \times *antarctica* (Nothofagaceae). Native tree growing in Argentina and Chile. Because of the morphological characteristics of the host plant, such as unconduplicated leaves with a broad lamina and smooth, light gray bark, the plant is likely to be a hybrid, probably *N. antarctica* \times *N. pumilio*.

Material studied: Argentina, Provincia del Neuquén, Parque Nacional Lanin, near the east shore of Espejo Chico lake. Leg. J. Puntieri and C. Brion, Feb. 18, 1996, BCRU 4338, MH 426; leg. M. Havrylenko and S. Takamatsu, Apr.

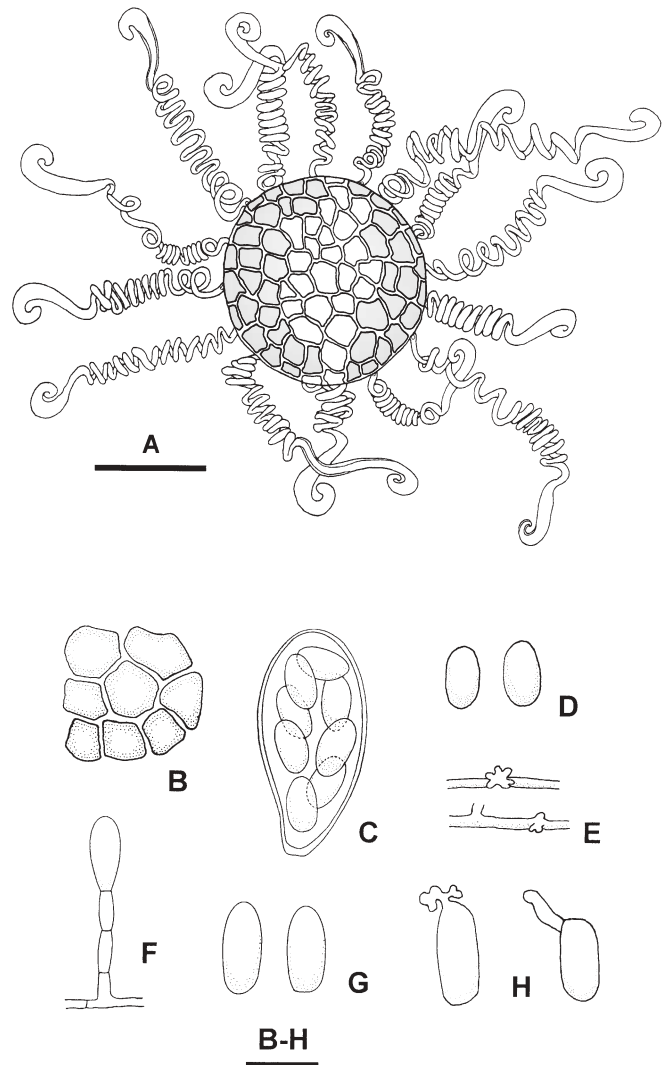


Fig. 4. *Erysiphe patagoniaca* (holotype). **A** Ascoma. **B** Peridial cells. **C** Ascus with ascospores. **D** Ascospores. **E** Appressoria. **F** Conidiophore with an immature conidium. **G** Conidia. **H** Germinating conidia. Bars **A** 50 μm ; **B–H** 20 μm

23, 2001, BCRU 4337 (holotype), MH 790, MH 791; leg. M. Havrylenko Mar. 12, 2002, BCRU 4339, MH 794, MH 795.

Remarks: The known *Erysiphe* (*Uncinula*) species with spirally twisted appendages are *E. nothofagi* (Thaxt.) U. Braun & S. Takamatsu, from the Argentina and Chile Andean area (Thaxter 1910; Braun 1987; Dianese and Dianese 1995; Havrylenko 1995; Havrylenko and Lorenzo 1999; Braun and Takamatsu 2000) and *E. kenjiana* (Homma) U. Braun & S. Takamatsu on *Ulmus* spp. from Asia (Homma 1930; Braun 1987). *Erysiphe kenjiana* distinctly differs from *E. patagoniaca* in its appendages, which are twisted only in the upper part, the numbers of appendages, asci, and ascospores, and its host plant (Table 1). *Erysiphe nothofagi* is most similar to *E. patagoniaca*, but differs in its appendages being brown-colored at the base and twisted only in the upper part (Fig. 1); the appendages of *E. patagoniaca* are spirally twisted throughout the length and hyaline (Fig. 3).

Table 1. Comparative morphological characters and host range of three *Erysiphe* species

Character	<i>E. nothofagi</i>	<i>E. kenjiana</i>	<i>E. patagoniaca</i>
Ascoma size (µm)	62–116	55–110	80–110
Appendage			
Number	8–20	7–15	15–25
Morphology	3–8 times spirally twisted, only in the upper part	1–2 times spirally twisted, only in the upper part	15–25 times spirally twisted throughout the length
Color	Brown at the base, hyaline at the twisted part	Hyaline	Hyaline
Ascus			
Number	4–9	3–6	8
Size (µm)	35–65 × 30–45	35–60 × 25–55	60–69 × 27–34
Ascospore			
Number	4–8	2(–4)	8
Size (µm)	17–25 × 10–14.5	18–39 × 12–23	16–21 × 9–12
Conidium size (µm)	24–27 × 10–16	23–32 × 12–15	18–29 × 8–11
Host	<i>Nothofagus antarctica</i> , <i>N. × antarctica</i> , <i>N. nervosa</i> , <i>N. obliqua</i> , and <i>N. pumilio</i> (Nothofagaceae)	<i>Ulmus pinnato-ramosa</i> and <i>U. pumila</i> (Ulmaceae)	<i>Nothofagus × antarctica</i> (Nothofagaceae)

E. patagoniaca shows coexistence in the same leaves of *N. × antarctica* with the two *Erysiphe* species that are endemic to the Andean-Patagonian region, *E. magellanica* and *E. nothofagi*.

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