SHORT COMMUNICATION

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

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Number of text pages: 7
Number of figures: 4
Number of tables: 1
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 twisted throughout the length, and 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. They are E. nothofagi (Thaxt.) U. Braun & S. Takamatsu (Fig. 1) and E. magellanica (Thaxt.) U. Braun & S. Takamatsu (Fig. 2). Whilst 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 paper, 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


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


Teleomorph: Ascomata gregarious, globose, 80-100(-120) µm diam. Peridial cells irregular in shape, mostly polygonal 11-25 µm diam. Appendages 8 to 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 uncinate. Asci 8, shortly stalked, 60-69 × 27-34 µm, 8-spored. Ascospores hyaline, ellipsoid, 16-21 x 9-12 µm.
Host: *Nothofagus xantarctica* (Nothofagaceae). Native tree growing in Argentina and Chile. Due to morphological characteristics of the host plant, such as un-conduplicated leaves with a broad lamina and smooth, light gray bark, the plant is likely to be a hybrid, probably *N. antarctica* × *N. pumilio*.


Remarks: The known *Erysiphe* (*Uncinula*) species with spirally twisted appendages are *E. nothofagi* (Thaxt.) U. Braun & S. Takamatsu, from 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 twisted only in the upper part, 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 brown-colored at the base and twisted only in the upper part (Fig. 1). Appendages of *E. patagoniaca* are spirally twisted throughout the length and hyaline (Fig. 3).

*E. patagoniaca* shows a coexistence in the same leaves of *N. xantarctica* with the two *Erysiphe* species which are endemic to the andean-patagonian region, *E. magellanica* and *E. nothofagi*.

**Acknowledgments** The authors are grateful to Ms Seiko Niinomi for providing the microphotographs of ascomata of *Erysiphe* spp. on *Nothofagus*. 
References

Braun U, Takamatsu S (2000) Phylogeny of Erysiphe, Microsphaera, Uncinula (Erysipheae) and Cystotheca, Podosphaera, Sphaerotheca (Cystothecae) inferred from rDNA ITS sequences, some taxonomic consequences. Schlechtendalia 4:1-33
Thaxter R (1910) Notes on Chilean Fungi. I. Bot Gaz 50:431-441

Legends of Figures

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

Fig. 4. Erysiphe patagonica (holotype) A ascoma. B peridial cells. C ascus with ascospores. D ascospores. E appressoria. F conidiophore with an immatured conidium. G conidia. H germinating conidia. Bars A 50 µm; B-H 20 µm
アルゼンチン・パタゴニアで発見されたErysiphe属Uncinula節の新種を記載した。ナンキョクブナの一雑種Nothofagus ×antarcticaの葉で発見されたErysiphe patagoniaca sp. nov.はE. nothofagiとE. kenjianaに似ているが、付属糸全体がコイル状に巻く特徴および付属糸、子のう、子のう胞子の数が異なる。パタゴニア固有のUncinula節菌であるE. magellanicaとE. nothofagiがE. patagoniacaの発生している同じ葉に共存しているのが認められた。
Table 1. Comparative morphological characters and host range of three *Erysiphe* species.

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