First Report of Powdery Mildew of *Omphalodes cappadocica* Caused by *Golovinomyces cynoglossi* (*Erysiphe cynoglossi*) in North America

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*Omphalodes cappadocica* DC (Boraginaceae) (common name: Navel Seed) is native to Asia Minor and is grown as an ornamental plant in the USA where it is valued for its bright blue flowers (2). During continuing studies of Erysiphales in the Pacific Northwest, powdery mildew was observed on specimen plants of *O. cappadocica* growing in a private garden in Seattle, King Co., WA in August 2006. Review of scientific literature revealed no published information on a powdery mildew fungus attacking a species of *Omphalodes* in North America. This report describes and illustrates powdery mildew of *O. cappadocica* as well as taxonomically-important features of the causal organism, determined to be *Golovinomyces cynoglossi* (Wallr.) V. P. Gelyuta.

The disease was found on each of eight plants of *O. cappadocica* observed during early senescence following anthesis. There were no visible symptoms or damage distinguishable from normal senescence. Signs of the disease (Fig. 1) included effuse to dense patches of white- to grayish-brown mycelia, primarily on adaxial leaf surfaces. The fungus formed superficial hyphae with nipple-shaped appressoria (Fig. 2); conidiophore foot cells that were cylindrical and measured (39.5-)60.5-86(-86.5) × 9.5-12(-13) µm; and conidia that formed chains (Fig. 3) and were ovoid to cylindrical (Fig. 4), lacked fibrosin bodies, and measured (24.5-)28.5-41.5(-44.5) × (8.5-)12.5-20.5(-23) µm. The teleomorph was not observed. A voucher specimen was deposited with the Mycological Herbarium of the Department of Plant Pathology at Washington State University.

![Fig. 1. Signs of powdery mildew of *Omphalodes cappadocica*.](image1)

![Fig. 2. Appressorium formed by *Golovinomyces cynoglossi* on *Omphalodes cappadocica*.](image2)
Fungal morphological characteristics and host fit Braun’s (3,4) descriptions for *Erysiphe cynoglossi* (Wallr.) U. Braun. That name is regarded as synonymous with *Golovinomyces cynoglossi*. Braun (3,4) distinguished *G. cynoglossi* from the morphologically similar *E. cichoracearum* DC, now known as *Golovinomyces cichoracearum* (DC.) V.P. Gelyuta. In his (3,4) system, *G. cichoracearum* restricted to members of the Asteraceae.

*Golovinomyces cynoglossi* occurs on species of various genera of Boraginaceae (3,4) and recently was found on *Myosotis sylvatica* Ehrb.: Hoffm. (Boraginaceae) in western Washington State (5). Although previous reports of *G. cynoglossi* on *Omphalodes* species are lacking for North America, the fungus is known to occur on *O. cappadocica* in Asia and Georgia (1), and on *Omphalodes linifolia* (L.) Moench in Estonia, Germany, Lithuania, and Switzerland (1,4).

Powdery mildew on *O. cappadocica* is unsightly and a diseased plant would be judged unacceptable by most home owners. However, in this occurrence the disease was observed on plants after the period of flowering and so did not detract from the appearance of the plants when they were showiest. The manifestation of *G. cynoglossi* during the period following anthesis resembles the disease development observed for powdery mildew of *M. sylvatica* in Seattle (5), where obvious fungal development also occurred late in the life cycle of the host.

The apparent ability of *G. cynoglossi* to infect a wide range of Boraginaceae (3,4) suggests that it could pose a threat to growers specializing in ornamental Boraginaceae. Information on host ranges of *G. cynoglossi* strains, based on cross-inoculation studies, would provide useful information for disease control.

**Literature Cited**