



First report of powdery mildew caused by *Golovinomyces monardae* on peppermint in Italy

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Peppermint (*Mentha × piperita*) is widespread in cultivation in many regions of the world as a medicinal plants. During the summer of 2017, in a garden near Biella (northern Italy), 6-month-old peppermint plants exhibited a white powdery mildew growth on the adaxial surfaces of leaves, stems and petioles at temperature range from 15 to 28 °C. Infected leaves turned yellow and dropped. Conidia were hyaline, elliptical to doliform, without fibrosin bodies, and measured 25.2 to 39.8 × 15.7 to 28.9 (31.3 × 22.6 average) µm. Chasmothecia were not observed. Based on morphology, the causal agent was determined as *Golovinomyces* spp. (Scholler et al. 2016). The internal transcribed spacer region of rDNA of the pathogen was amplified using the primers ITS1/ITS4 and sequenced (GenBank Accession MG205583). BLASTn analysis (Altschul et al. 1997) of the 436 bp obtained showed 99% similarity with *Golovinomyces monardae* (G.S. Nagy) M. Scholler, U. Brawn & Anke Schmidt (LC076842, voucher KR:M-43413). Pathogenicity was confirmed in a greenhouse at 18 to 25 °C by spraying leaves of healthy peppermint plants with the pathogen at 1 × 10⁵ conidia/ml. Twenty plants were inoculated, and the same number of non-inoculated plants served as control. Typical spots of powdery mildew developed

on inoculated plants 15 to 17 days after inoculation. Non-inoculated plants did not show symptoms. To our knowledge, this is the first report of powdery mildew caused by *Golovinomyces monardae* on peppermint in Italy. According to taxonomic and phylogenetic studies of the *Golovinomyces biocellatus* complex (Scholler et al. 2016) the same pathogen has been reported on peppermint in Germany, on *Mentha spicata* in Italy and on other hosts belonging to Lamiaceae and Verbenaceae (Garibaldi et al. 2010; Scholler et al. 2016).

References

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