First report of powdery mildew of *Solidago gigantea* caused by *Golovinomyces asterum* var. *solidaginis* in Slovenia

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Giant goldenrod (*Solidago gigantea* Aiton syn. *S. serotina* Aiton) is a North American species and is invasive in Europe and Asia. Hundreds of *S. gigantea* plants growing wild in a riverside in Zbilje (46°09'24"N 14°25'10" E), Slovenia, were found infected with a powdery mildew (summer/autumn 2017). Symptoms developed as circular to irregular white patches, which subsequently revealed abundant hyphal growth on both sides of the leaves and young stems. Appressoria on the hyphae were mostly nipple-shaped or occasionally moderately lobed. Erect conidiophores (90–220 × 10–12 µm) arose from the lateral part of hyphae and produced 2–6 conidia in chains with a sinuate outline. Conidia were hyaline, ellipsoid to cylindric-oval, 30–42 × 16–22 µm ($n=30$), and devoid of distinct fibrosin bodies. Germ tubes appeared at the perihilar position of conidia. Chasmothecia were not observed. For molecular identification, the ITS region of rDNA was amplified from genomic DNA of isolate KUS-F29968, sequenced and the 743 bp sequence deposited in GenBank (accession No. MH333274). A nucleotide BLAST search revealed 99% similarity to the GenBank ITS sequences of *Golovinomyces asterum* var. *solidaginis* from Japan (AB077625 ex *Solidago*

altissima, AB077627 ex *Solidago virgaurea* subsp. *asiatica*) and Korea (KC513763 ex *Solidago gigantea*). Based on molecular analysis and morphological characteristics, the fungus was identified as *G. asterum* var. *solidaginis* U. Braun (Braun and Cook 2012). *Solidago gigantea* has been recorded as host plant of *G. asterum* var. *solidaginis* in North America (U.S.A), Asia (Japan, Korea) and Europe, i.e., France, Germany, Hungary, Poland, Romania, and Switzerland, but not in Slovenia (Farr and Rossman 2018). To our knowledge, this is the first report of powdery mildew caused by *G. asterum* var. *solidaginis* on *S. gigantea* in Slovenia. Voucher specimens are available in the Korea University herbarium (KUS-F29968) and in the phytopathological herbarium of the Slovenian Institute of Hop Research and Brewing (IHPS-F51).

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