First report of powdery mildew of *Aesculus hippocastanum* caused by *Erysiphe flexuosa* in Turkey

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Abstract. Powdery mildew symptoms were observed on the leaves of horse chestnut (*Aesculus hippocastanum*) which is common in urban areas of Ordu province, Turkey. The pathogen was identified as *Erysiphe flexuosa* based on morphological characters. This is the first report of *E. flexuosa* on horse chestnut from Turkey.

Aesculus hippocastanum is a large deciduous tree, commonly known as horse chestnut. It is planted in parks and gardens in Ordu province, Turkey. In August 2009, leaves of *A. hippocastanum* showing typical symptoms of a powdery mildew were collected from trees in parks of Ordu (Fig. 1).

White mycelium and chasmothecia were present on both leaf surfaces, but chasmothecia were abundant on the lower surfaces of leaves. Chasmothecia were initially yellow or light brown and then turned black upon maturity (Fig. 2). They were globose or subglobose, $102\text{--}143 \times 89\text{--}127\text{ }\mu\text{m}$ in size. Chasmothecia had two types of appendages: long ones terminating in circinate tips and short, bristle-like ones (Fig. 3). The long appendages measured $91\text{--}161\text{ }\mu\text{m}$ and the shorter ones measured $13\text{--}45\text{ }\mu\text{m}$. Asci were several per chasmothecia, clavate, short-stalked and $52\text{--}64 \times 28\text{--}38\text{ }\mu\text{m}$ (Fig. 4). Ascospores were ellipsoid and $15\text{--}29 \times 9\text{--}16\text{ }\mu\text{m}$ (Fig. 5). Conidia were cylindrical, measuring $23\text{--}41 \times 10\text{--}16\text{ }\mu\text{m}$ (Fig. 6). The pathogen was identified as *Erysiphe flexuosa* (Peck) U. Braun &

S. Takamatsu based on its micro-morphology. A specimen was deposited in the Department of Plant Protection, Faculty of Agriculture, Atatürk University, Erzurum, Turkey.

Erysiphe flexuosa is a North American powdery mildew which has recently spread to Europe. The first European record was published by Ale-Agha *et al.* (2000) from Germany. Furthermore, it has been reported on *A. hippocastanum* and other *Aesculus* spp. from Austria, Croatia, France, Poland, Slovakia, UK and Switzerland (Zimmermannová-Pastirčáková and Pastirčák 2002; Zimmermannová-Pastirčáková *et al.* 2002; Bolay 2005), in Hungary (Kiss *et al.* 2004), in Slovenia (Milevoj 2004), in Italy (Nali 2006), in Spain (Campelo *et al.* 2007) and in Bulgaria (Stoykov and Denchev 2008). To our knowledge, this is the first report of *E. flexuosa* on horse chestnut from Turkey.

Fig. 1. Powdery mildew symptoms on *Aesculus hippocastanum* infected with *Erysiphe flexuosa*. Healthy (left) and infected (right) leaves.

Fig. 2. Young and mature chasmothecia on a leaf of *Aesculus hippocastanum*.

Fig. 3. *Erysiphe flexuosa* chasmothecia with circinate tips and bristle-like appendages. Bar = 50 μ m.

Fig. 5. Ascospores of *Erysiphe flexuosa*. Bar = 20 μ m.

Fig. 4. *Erysiphe flexuosa* ascus with ascospores. Bar = 25 μ m.

Fig. 6. Conidia of *Erysiphe flexuosa*. Bar = 30 μ m.

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