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journal homepage: www.elsevier.com/locate/myc**Short communication****Obolarina persica sp. nov., associated with dying Quercus in Iran**

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ABSTRACT

A new species, *Obolarina persica*, is described from Iran. It is widely associated with dying *Quercus brantii*, on which it produces charcoal-like stromata. The fungus described herein differs from the other described species, *Ob. dryophila*, primarily in its much larger ascospores.

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A disease of *Quercus brantii* Lindl., a tree species widespread in Iran, Iraq, Lebanon, Syria and Turkey, has been found in western Iranian forests covering the Zagros Mountains located in Ilam, Lorestan and Kermanshah Provinces. The disease is known as charcoal disease owing to the black stromata of a fungus of the Xylariaceae that develop in the bark of diseased trees (Fig. 2d–g). Outbreaks of charcoal disease were observed in all areas of Ilam Province including Choqa-Sabz, Manjel, Arqavan and Mohit-Zist forests, Lorestan Province including Bolouran and Kounab forests in the Kouhdasht area, Korki and Qalae Nasir in the Pol Dokhtar area, and in Kermanshah Province. In recent years, climate change has occurred in Zagros forests, as precipitation decreased from 656 mm in 2004 to 260 mm in 2008, resulting in drought stress and extending desert areas.

The symptoms appear as the tree declines, beginning with discolorations and browning of the leaves, drying of some twigs, and resulting in death of one part of the tree or the whole tree. All infected trees with above symptoms in spring were dead after winter, and exhibited signs of charcoal disease, with carbonaceous stromata erupting between the bark and xylem on younger trees and between the layers of bark in the old infected trees (Fig. 2d, g). Stromata were not formed in spring when the initial symptoms appeared, started developing under bark afterward, and became mature on trees that were still alive or had been killed from late Jun. to Jan. of the next year. Mature stromata could last up to 6 mo before deteriorated. Morphological features and subsequent molecular studies showed the associated fungus to be an undescribed species of *Obolarina* Pouzar, for which the name *Ob.*

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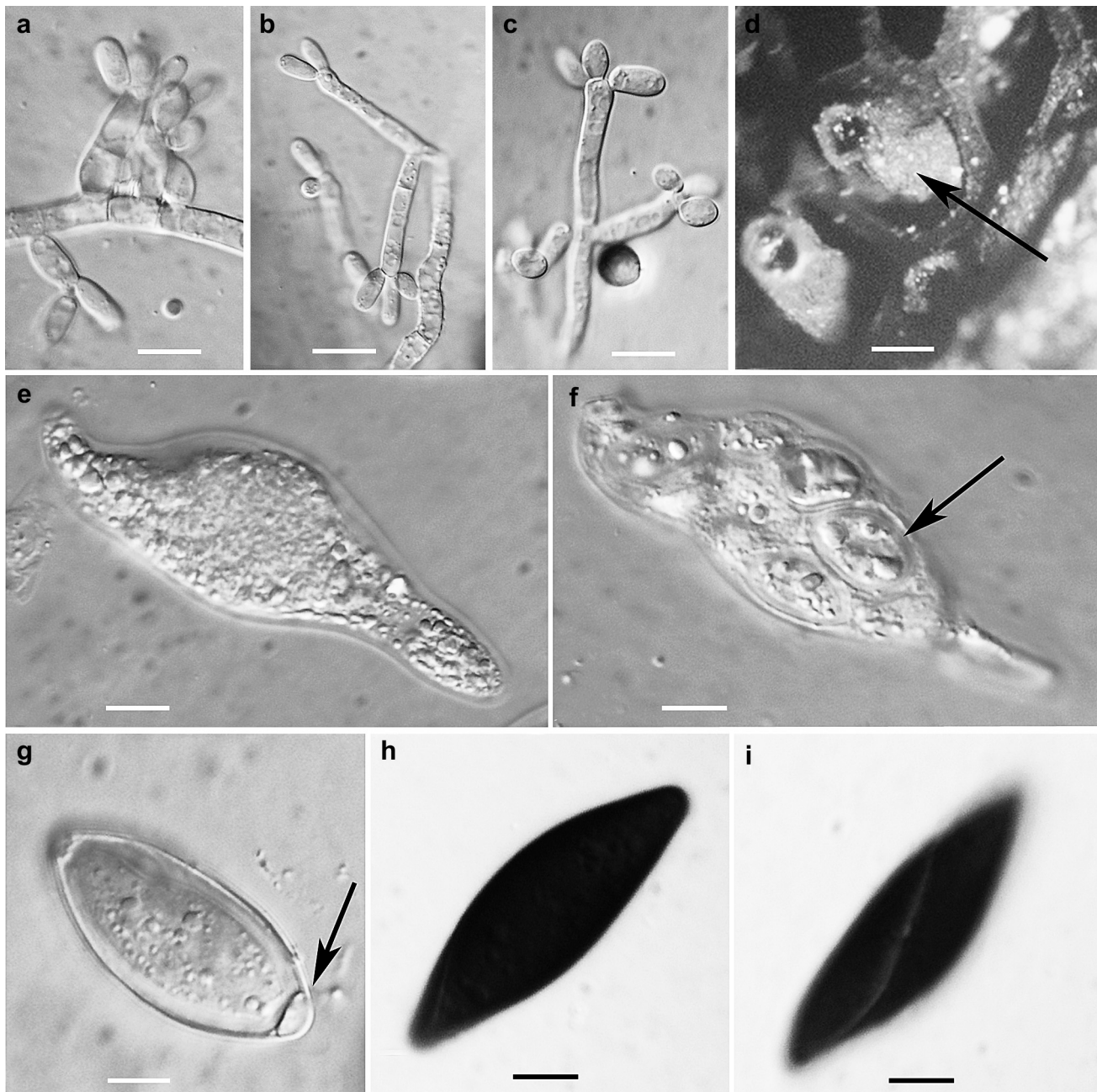


Fig. 1 – *Obolarina persica*. a–c: Anamorph showing conidia and conidiophores. d: Two stromatal locules fractured to show protruding perithecia. One perithecium marked by arrow. e–f: Immature asci, the one at f showing several newly formed ascospores, one of which is marked by an arrow. g: Immature ascospore. An appendage marked by an arrow. h–i: Mature ascospores, that at i showing a faint sigmoid germination slit. Bars: d, 0.5 mm; others, 7 μ m.

persica is given. It should be noted that we have yet to prove *Ob. persica* the pathogen responsible for charcoal disease by inoculations despite that the fungus is consistently associated with the disease.

Cultures were established by removing ascospores from aseptically cut perithecia with sterile needles and stabbing into plates of malt extract agar prepared from scratch (SME, formulated in Kenerley and Rogers 1976). Juvenile cultures were transferred to oatmeal agar (Difco) (OMA), 2% potato dextrose agar with 5 g/L of yeast extract (Difco) (PDYA), Leonian's medium (Booth 1971), and 2% cornmeal agar (Difco)

(CMA). Ascospores were measured in water. Hyaline structures such as asci and immature ascospores were examined in water supplemented with dilute Melzer's iodine reagent (1.5 g potassium iodide, 0.5 g iodine, 20 ml chloral hydrate, 20 ml distilled water). The numbers of ascospores, perithecia, conidia and conidiophores that were measured to form the size ranges in the descriptions are 20, 5, 20 and 5, respectively. Photographs of microscopic structures were made with an Olympus BH-2 differential interference contrast microscope (Tokyo), fitted with a Nikon Cool Pix 4300 camera. Photographs of stromatal structures were made with a stereomicroscope.

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