

باب الحوائجی و عسگری: برخی از ویژگی‌های زیست‌شناسی و مورفولوژیکی *Platychora ulmi* ...

Notes on biology and morphology of *Platychora ulmi*, the causal agent of elm trees leaf spot in Hamedan. Eng. F. Babolhavaeji¹ and Eng. B. Asgari^{2*}. Department of Plant Protection, Faculty of Agriculture, Bu-Ali Sina University, Hamedan, Iran¹; Department of Botany, Iranian Research Institute of Plant Protection, P.O. Box 1454, Tehran 19395, Iran². Corresponding author: bita_asgari@yahoo.com*.

During 2006-07, extensive leaf spot symptoms were observed on elm trees (*Ulmus minor* Mill.) existed on river sides around Hamedan. In order to isolate the pathogenic agent, several pieces of infected leaves were plated on PDA (potato-dextrose agar, Merck) and MEA (malt extract agar, Merck) after surface disinfection with 0.5-1% sodium hypochlorite. Microscopic slides of the hand-sectioned specimen were prepared in cotton-blue and water and studied subsequently. According to literatures review (5, 6) the teleomorphic fungus was identified as *Platychora ulmi* (Schleich.: Fr.) Petr., with the anamorphic stage known as *Piggotia ulmi* (Grev.) Keissl. The specimens are preserved in the mycological herbarium of Ministry of Jihad-e-Agriculture ("IRAN") as IRAN 14283 F. Biological studies were carried out by periodic examination of infected leaves during the summer and also fallen leaves gathered in 120×60cm hole (10 cm depth) which has been covered with a wire net. At the early of April, spore traps (slides covered with grease) were applied on wire net to determine the initiation of ascospores discharging. Since the fungus isolation on culture media did not succeed, both teleomorphic and anamorphic stages are described here based on direct observation of infected leaves as follows: *Platychora ulmi* is an ascomycetous fungus with black, up to 0.5 mm broad, sub-epidermal, solitary to aggregated, cushion-shaped and multi-locular stromata (Fig. 1A), with each locule (pseudothecium) globose to subglobose, 80-120 μm diam., provided with a papillate ostiole (Fig. 1B-D). Fungus stroma is composed of thick-walled, dark brown, angular (*Textura angularis*), 5-11 μm cells (Fig. 1E). Asci arising from pseudothecia basal hymenium, bitunicate, cylindrical, 8-spored, short stipitate, 50-60×5-8 μm (Fig. 1F-H); pseudoparaphyses filiform, hyaline and branched; ascospores obliquely uniseriate, ovoid, (8-)10-12×4-5 μm, hyaline to pale brown at maturity, with a transverse septum near the lower end (Fig. 1I, J). The anamorphic stage, *Piggotia ulmi*, has subcuticular, acervular, black, applanate to pulvinate conidiomata. Conidiogenous cells solitary, septate only near the base, pale brown, smooth, cylindrical, straight, holoblastic, annellidic, 10-15×3.5-4 μm (Fig. 1K, L); conidia cylindrical, pale brown, aseptate, thin-walled, smooth, 7.5-9×4-5 μm, with rounded apex and truncated base (Fig. 1M). The biological studies

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revealed that despite the initiation of mature ascospores discharging at the early of May, the first disease symptoms appear as 2-3 mm broad, pale green to yellow spots on leaves upper surface in the last days of July. At the early of August, when the spots become more vivid, dark and raised area containing one to several acervuli appear. As the disease progress during summer, the fungus black, pulvinate and sub-epidermal stromata form at the positions of spots. Finally in autumn, when the temperature decreases and the infected leaves fall, pseudothecia appear gradually in stromata. The greatest number of pseudothecia could be observed during the last days of January. *Platychora ulmi* causes leaf spots on various elm trees including *Ulmus campestris* L., *U. glabra* Huds., *U. minor*, *U. montana* Stokes and *U. procera* Salisb. throughout the world, especially in European countries (1, 2). In Iran, it has been already reported on *U. carpinifolia* Borkh. in Kelardasht, Mashhad and Tabriz (3, 7) and *Ulmus* sp. in Karaj (4). This is the first report of its occurrence on *U. minor* in Hamedan with its biological aspects declaration.

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