

DISEASE NOTE

First Record of Powdery Mildew Caused by *Erysiphe quercicola* on Chinese Apple (*Zizyphus lotus* L) in Egypt

Shehata, A.S.F.* ; Yousef, H. and Hassan, M.S.S.

Received: 29 November 2022 / Accepted: 12 December 2022 / Published online: 13 December 2022.

©Egyptian Phytopathological Society 2022

Powdery mildew caused by *Erysiphe quercicola* is a widespread in several trees in tropical and sub-tropical countries. In November 2020-2021 during an examination of *Zizyphus lotus* trees growing in Giza, and Qaliobia Governorates, several trees were observed with symptoms of powdery mildew on the leaves, young shoots, and fruits. Powdery mildew mycelium covered large parts of the leaf surfaces, young shoots, and fruits as shown in Fig. 1 (A, B and C). Powdery mildew-infected leaves were collected and kept for further studies.

Morphological characteristics of the fungus were studied. The conidiophores bear fragmented, foot cell cylindrical straight or slightly curved at base and non-chained conidia, which are produced singly at the apex of the conidiophores, the primary conidiospores are ellipsoid or ovoid shape, with a rounded apex and truncate base. Meanwhile, mature conidia are mainly dolioform and formed singly. First, mycelial samples were removed from the infected leaves on a microscope slide. The slides were examined under light microscope. Conidiophore produces conidia singly, and consists of a foot-cell, straight or occasionally slightly curved at the base, basal septum at the branching point, followed by one or two cells up to the same length as the foot-cell (Fig. 2). According to the studied morphological characteristics, the causal fungus was identified as *E. quercicola* (Braun and Cook, 2012 and Kumar, *et al.* 2018), the cause of powdery mildew on *Zizyphus lotus*.

DNA was extracted from fungal mass on the infected leaf and amplified for the partial of internal transcribed spacer (ITS) regions with the primers ITS1/ITS4 and sequenced (White *et al.* 1990). The sequence analysis by BLASTn search of 552 bp (GenBank accession no. MW364272) indicated >99% similarity with *Erysiphe quercicola* with the accession Nos. MT569439, MT569438, MN394113, KM260690, KM260685, KM260686, KM260688 and KM260687 (Fig. 3). The *Zizyphus lotus* leaves were inoculated on leaves, all inoculated leaves developed powdery mildew symptoms after 10 days, whereas the control plants remained symptomless. The morphology of the fungus on the inoculated leaves was identical to that initially observed on the infected leaves of *Zizyphus lotus*. To our knowledge, this is the first record of *Erysiphe quercicola* in Egypt.

Keywords: Powdery Mildew, *Erysiphe quercicola*, Chinese Apple, *Zizyphus lotus*

*Correspondence: Shehata, A.S.F.

E-mail: arpp2022@arc.sci.eg

Abou-Ghanima, S.F. Shehata

<https://orcid.org/0000-0003-1698-7375>

Heba Yousef

<https://orcid.org/0000-0003-3314-8856>

Mabrouk S.S. Hassan

<https://orcid.org/0000-0002-3477-339X>

Plant Pathology Research Institute,
Agricultural Research Center, 12619, Giza,
Egypt.



Fig. (2): Showing asexual morph, conidiophore and conidiospore of *E. quercicola*



Fig. (1): Symptoms of powdery mildew on A: Leaf surface, B: Young shoot and C: Fruits

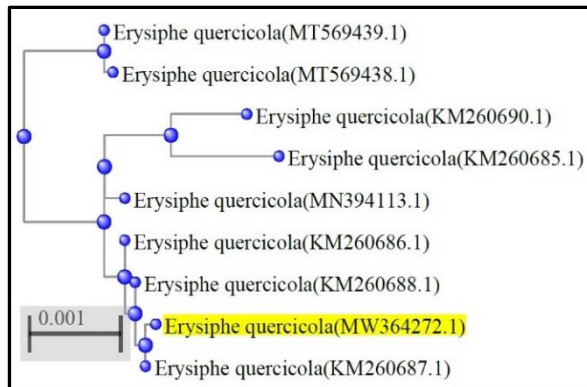


Fig. (3): The BLASTn search analysis phylogenetic tree of 552 bp (GenBank accession no. MW364272) indicate >99% similarity with *Erysiphe quercicola* accession Nos. MT569439, MT569438, MN394113, KM260690, KM260685, KM260686, KM260688 and KM260687.

REFERENCES

- Braun, U. and Cook, R.T.A. 2012. Taxonomic manual of the Erysiphales (Powdery Mildews) (CBS Biodiversity Series No. 11). Utrecht, the Netherlands: Fungal Biodiversity Centre.
- Kumar, S.; Stecher, G.; Li, M.; Knyaz, C.; and Tamura, K. 2018. Mega x: Molecular evolutionary genetics analysis across computing. *Mol. Biol. Evol.*, (35): 1547-1549.
- White, T.J.; Bruns, T.; Lee, S. and Taylor, J. 1990. Amplification and direct sequencing of fungal ribosomal RNA genes for phylogenetics. In: *PCR Protocols: A Guide to Methods and Applications* (Innis MA, Gelfand DH, Sninsky JJ & White TJ eds), pp. 315-322. Academic Press, San Diego.



Copyright: © 2022 by the authors. Licensee EJP, EKB, Egypt. EJP offers immediate open access to its material on the grounds that making research accessible freely to the public facilitates a more global knowledge exchange. Users can read, download, copy, distribute, print, or share a link to the complete text of the application under [Creative commons BY_NC_SA 4.0 International License](https://creativecommons.org/licenses/by-nc-sa/4.0/).

