



First report of *Nigrospora lacticolonia* as the agent causing brown leaf blight disease on *Nelumbo nucifera* in Hue, Vietnam

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Abstract

Nelumbo nucifera, commonly known as the sacred lotus, has significant cultural, medicinal, and nutritional value as an aquatic plant in Vietnam. From 2022 to 2023, lotus plants in Hue City, Vietnam, exhibited symptoms of brown leaf blight. Initially, irregular light brown spots appeared on the leaves, which gradually expanded until the entire leaf turned dark brown and wilted. Based on morphological characteristics and DNA sequence data of three loci, the internal transcribed spacer (ITS), beta-tubulin (*TUB2*), and translation elongation factor 1-alpha (*TEF1-α*), supported by phylogenetic analysis, the pathogen was identified as *Nigrospora lacticolonia*. BLASTn analyses revealed 99.5–100% sequence similarity with *N. lacticolonia* accessions in GenBank. Multigene phylogenetic analysis based on a concatenated dataset of the three loci (ITS, *TUB2*, and *TEF1-α*) further clustered the isolates with *N. lacticolonia*, providing robust molecular support for this identification. Pathogenicity tests on whole plants grown under controlled conditions verified that the fungus was the causal agent of the disease, fulfilling Koch's postulates. The disease incidence was approximately 91.67% (11/12) after 15 days post-inoculation, with an average lesion diameter of 121.27 ± 34.19 mm and an average lesion length to leaf length ratio of 75.40%. To our knowledge, this is the first report of brown leaf blight caused by *N. lacticolonia* on *N. nucifera* in Vietnam and worldwide. These findings provide new insights into fungal pathogens affecting lotus and highlight the importance of developing effective disease management strategies to mitigate the economic impact of this disease on lotus cultivation.

Keywords Apiosphariaceae · Aquatic plant · Fungal pathogens · Phylogenetic analysis · Sordariomycetes

Lotus (*Nelumbo nucifera* Gaertn.) is an economically and culturally important aquatic crop valued for its nutritional, pharmacological, and ornamental uses (Sharma et al. 2017). Its leaves, seeds, embryos, and rhizomes are

widely utilized in Asian cuisine and traditional medicine, and market demand is expanding due to growing interest in natural products with antioxidant and anti-inflammatory properties. However, yield and quality are increasingly limited by diverse fungal diseases, leading to production losses and reduced commercial value (Chen and Kirschner 2018; Cui and Sun 2012; Gong et al. 2022). Early and accurate identification of causal pathogens is essential for developing effective and sustainable disease management strategies. During field surveys conducted in 2022 and 2023, brown leaf blight symptoms were observed on approximately 10–15% of *N. nucifera* (sacred lotus) plants in cultivation areas in Hue City, Vietnam (Dong Ba, Thuy Xuan). The early symptoms were characterized by small brown spots on leaves, which gradually dried, coalesced,

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