Hidden diversity of tree pathogens in an urban ecosystem: phytopathogenic fungi of deciduous trees in Szczytnicki Park

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Urban forestry is an interdisciplinary field focused on the functioning, protection, and management of trees and woody plant communities in urban environments. Urban trees play important ecological and climatic roles by improving air quality, reducing heat, retaining rainwater, supporting biodiversity, and enhancing the quality of life in cities. At the same time, urban environments may facilitate the emergence and spread of plant pathogens (Konijnendijk, Randrup 2004, Paap et al. 2017, Webb et al. 2023). Cities, as major hubs of transportation and international trade, often serve as entry points for exotic organisms, including pathogenic fungi, which may subsequently spread into surrounding ecosystems (Paap et al. 2017, Martin, Conway 2025). In addition, urban trees are exposed to stress factors such as air pollution, soil salinity, limited rooting space, and soil compaction, which may weaken tree vitality and increase susceptibility to disease (Webb et al. 2023).

The aim of this study was to assess the health status of deciduous trees in a selected part of Szczytnicki Park in Wrocław and to identify phytopathogenic fungi associated with observed leaf symptoms. In total, 302 deciduous trees and shrubs were inventoried. Leaves showing necrotic spots or discoloration from five genera of deciduous trees and shrubs were collected and surface-sterilized, then placed on a PDA (Potato Dextrose Agar) medium to isolate fungal organisms. Selected isolates were further analyzed using molecular and phylogenetic methods to determine their taxonomic affiliation and potential ecological role in the urban ecosystem. The results contribute to a better understanding of phytopathogenic fungal diversity in urban environments and may support improved monitoring and management of urban green infrastructure.

References

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