

The First Report of *Penicillium citrinum* from Medicinal Plant *Eclipta prostrata* with its Characterization and Bioactivities

Tarekul ISLAM ¹, Md. Mobarak HOSSAIN ¹, Mohaimenul HOQUE ¹,
Sarah SARKER ² & Prodip Kumar BARAL ¹ *

¹ Department of Pharmacy, Faculty of Science, Noakhali Science and Technology University,
Noakhali-3814, Bangladesh.

² Plant Biotechnology Division, National Institute of Biotechnology,
Ganakbari, Ashulia, Savar, Dhaka 1349, Bangladesh

SUMMARY. The secondary metabolites of endophytic fungi are responsible for potential biological activities and sometimes exceed their host plant. Therefore, the medicinal plant *Eclipta prostrata*, was investigated to identify endophytic fungi and assess their biological properties. The fungi were isolated by following these steps: surface sterilization, cultivation, isolation, and purification. One filamentous endophytic fungus was identified as *Penicillium citrinum* (OR062576) by DNA signature and conidiophores. The fungal extract showed a substantial (50% free radical inhibitory concentration) IC₅₀ value of 26.27 µg/mL, twofold the reference ascorbic acid. However, we did not observe antibacterial effects against all test organisms. In the cytotoxic evaluation on *A. salina*, this extract exhibited almost complete inhibition at 100 µg/mL with a low (50% lethal concentration) LC₅₀ (8 h) of 8.26 µg/mL. To our knowledge, this is the first report of *Penicillium citrinum* being isolated from *Eclipta prostrata*, with the isolate showing significant antioxidant and cytotoxic properties.

RESUMEN. Los metabolitos secundarios de los hongos endófitos son responsables de las actividades biológicas potenciales y, en ocasiones, superan a las de su planta huésped. Por lo tanto, se investigó la planta medicinal *Eclipta prostrata* para identificar hongos endófitos y evaluar sus propiedades biológicas. Los hongos se aislaron siguiendo los siguientes pasos: esterilización de la superficie, cultivo, aislamiento y purificación. Un hongo endófito filamentos se identificó como *Penicillium citrinum* (OR062576) mediante la firma de ADN y los conidióforos. El extracto fúngico mostró un valor de CI50 sustancial (concentración inhibitoria de radicales libres del 50%) de 26,27 µg/mL, el doble del ácido ascórbico de referencia. Sin embargo, no se observaron efectos antibacterianos contra todos los organismos de prueba. En la evaluación citotóxica en *A. salina*, este extracto exhibió una inhibición casi completa a 100 µg/mL con una baja CL50 (concentración letal del 50%) (8 h) de 8,26 µg/mL. Hasta donde sabemos, este es el primer informe sobre el aislamiento de *Penicillium citrinum* de *Eclipta prostrata*, y el aislado muestra importantes propiedades antioxidantes y citotóxicas.

KEYWORDS: Antioxidant, cytotoxic, *Eclipta prostrate*, endophytic fungi, *Penicillium citrinum*.

* Author to whom correspondence should be addressed. E-mail: pkb.phar@nstu.edu.bd