Trichoderma atroviride as a bioremediator of Cu pollution: an in vitro study

Abstract

Isolated Trichoderma atroviride from Cu-polluted river sediment at the Serdang Industrial Area was studied under in vitro conditions to understand the mechanisms that allowed the fungi to thrive in the Cu-polluted freshwater ecosystem. From this study, adsorption was recognized as the main mechanism of Cu tolerance with 50–85% adsorption during the in vitro experiment. The uptake capacity of the isolate in liquid medium ranged from 0.8 to 11.2mg g\(^{-1}\) in the potato dextrose broth medium with increasing Cu concentrations from 25 to 300mg L\(^{-1}\). It was found that 2.7–5.0% of Cu was lost due to washing. The high percentage of Cu adsorption and the high uptake capacity of Cu by T. atroviride suggest that it is a potential bioremediator of Cu. However, further studies are needed to confirm its practical use as a bioremediating agent for Cu under field conditions.

Keyword: Trichoderma atroviride; Bioremediation; Adsorption; Cu absorption