

## **Is the high Cu tolerance of *Trichoderma atroviride* isolated from the Cu-polluted sediment due to adaptation? an in vitro toxicological study**

### **Abstract**

The tolerance of Cu by *Trichoderma atroviride*, a tolerant fungus isolated from the drainage surface sediment of the Serdang Industrial Area was investigated under in vitro conditions. Only this fungus species can tolerate up to 600 mg/L of Cu on solid medium Potato Dextrose Agar based on the isolation of the most tolerant fungus from the polluted sediment. Toxicity test performed on *T. atroviride*, showed a maximum tolerance at 300 mg/L of Cu concentration when grown in liquid medium Potato Dextrose Broth (PDB). The EC 50 value of the isolate was 287.73 mg/L of Cu concentration in PDB. The Cu concentration in the drainage surface sediment, where the *T. atroviride* was isolated from, was 347.64 µg/g while the geochemical distributions of the non-resistant and resistant fractions of Cu were 99.6 and 0.4%, respectively. The sediment data indicated that the drainage had greatly received anthropogenic Cu from the nearby industries which are involved in the manufacturing of plastics and electronic products. The present findings indicate that the high Cu tolerance showed by *T. atroviride* could be due to the well adaptation of the fungus to the Cu polluted sediment. Therefore, *T. atroviride* could be a potential bioremediator of Cu pollution in the freshwater ecosystem.

**Keyword:** EC50; Geochemical distributions of Cu; Toxicity test; *Trichoderma atroviride*