

**Assessment of Heavy Metal Toxicity in Four Species of Freshwater Ciliates  
(Spirotrichea; Ciliophora) from Delhi, India**

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## **Abstract**

*In vitro* laboratory experiments were conducted to determine the toxicity (percent survival and LC<sub>50</sub>) of essential and non-essential heavy metals (cadmium, copper, nickel, lead and zinc) in four spirotrich ciliates: *Euplotes* sp., *Notohymena* sp., *Pseudourostyla* sp. and *Tetmemena* sp. isolated from three different fresh water ecosystems in the Delhi region. The toxicity of the heavy metals was found to vary among the different ciliates. Copper was the most toxic (24 h-LC<sub>50</sub> value ranged between 0.125 to 0.74 mg/l) and zinc was the least toxic (24 h-LC<sub>50</sub> value ranged between 46.98-144.32 mg/l) to each of the ciliates. Of the four ciliates, *Notohymena* sp. had the highest tolerance limit to three heavy metals (Cu, Cd and Pb) out of the five tested. This study shows the high potentiality of using fresh water ciliates for monitoring the intensity and potency of ecological damage caused by heavy metals in aquatic ecosystems.

**Keywords:** Ciliates, Freshwater, Heavy metals, LC<sub>50</sub>, Toxicity.