A COMPARATIVE SURVEY OF BIOACCUMULATION OF SOME METALLIC IONS SUCH AS Cu(II), $Cr(VI)O_4^{2-}$ BY THE AQUATIC FERN – *Azolla pinnata*

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ABSTRACT

Plants of *Azolla pinnata* were treated with six different concentrations of Cu(II) and $Cr(VI)O_4^{2-}$ (0.5, 1.0, 2.0, 3.0, 4.0, and 5.0 mg dm^{-3}) for 48, 72, 168 hours under laboratory conditions. Accumulation of Cu(II) and $Cr(VI)O_4^{2-}$ by *Azolla pinnata* was studied. Cu(II) accumulation was greater than that of Cr for *Azolla* plants. The plants showed ability to reduce 5.0 mg dm^{-3} Cu background concentration to below 0.03 mg dm^{-3} within 168 hours. The $Cr(VI)O_4^{2-}$ concentration of 5.0 mg dm^{-3} was reduced to below 0.14 mg dm^{-3} in 168 hours. Cysteine synthesis was greater under Cu than Cr stress condition. The Chlorophyll content in plants decreased non-significantly with an increase in Cu(II) and $Cr(VI)O_4^{2-}$ concentrations and duration of exposure. The results suggest that an increase in cysteine by Cu(II) and $Cr(VI)O_4^{2-}$ treatment at the initial exposure period are part of the overall expression of Cu(II) and $Cr(VI)O_4^{2-}$ tolerance in the plant, and the decrease in Chlorophyll content is a consequence of Cu(II) and $Cr(VI)O_4^{2-}$ toxicity at higher metal concentrations and increased period of exposure.