Phytoremediation of Nickel Contaminated Water by Giant Salvinia (Salvinia molesta)

Student’s Name : Teguh Widiarso

NRP : 1507 100 001

Major : Biology F MIPA-ITS

Consellor : Aunurohim, S.Si, DEA
            Tutik Nurhidayati, S.Si, M.Si

ABSTRACT

The research of phytoremediation of nickel contaminated water by giant Salvinia (Salvinia molesta) has been worked. Preliminary study by Srivastav (1994), showed that Salvinia molesta able to reduce the content of Ni with percentage of nickel removal 56-96 % for 14 days. This study aims to examine more information about the capability of Salvinia molesta root organs and non root organs to accumulate Ni and the value of Transfer Factor (TF). Phytoremediation medium is NiCl₂ solution with concentration 0, 3 and 6 mg/l added in the 3 vessels and volume each vessels 2,5 liter. Salvinia molesta used as much as 140 grams of fresh weight to each vessels. Measuring the concentration of nickel in plants and the media performed on days 0, 6 and 12 using AAS. Furthermore, Ni concentration data used to calculate the Transfer Factor analyzed descriptively and quantitatively. The results showed that Ni accumulation in root organs is higher than non root organs. The amount of Ni accumulation in root organs, respectively during the exposure period 0, 6 and 12 days for control, NiCl₂ concentration 3 mg/l and 6 mg/l continued 0,04; 0,03 and
0.05 mg/kg, concentration 3 mg/l continued 0.15; 1.38 and 2.3 mg/kg and concentration 6 mg/l continued 0.13; 2.63; 5.13 mg/kg. While the non root organs (stems and leaves) for control continued 0.02; 0.07 and 0.04 mg/kg, concentration 3 mg/l continued 0.15; 0.59 and 1.09 mg/kg and concentration 6 mg/l continued 0.13; 0.98 and 4.3 mg/kg. Value of Transfer Factor (TF) obtained at the highest exposure time of 12 days for NiCl₂ concentration 3 mg/l is 4.75 l/kg so that Salvinia molesta categorized as a metal accumulator species.

Keyword : Phytoremediation, Nickel, Nickel Contaminated Water, Giant Salvinia (Salvinia molesta), Transfer Factor (TF)