

**POTENSI TANAMAN AIR *Zantedeschia aethiopica*, *Echinodorus palaefolius*
dan *Pontederia lanceolata* SEBAGAI AGEN FITOREMEDIASI LOGAM
Pb PADA LIMBAH CAIR INDUSTRI KERTAS**

ABSTRAK

Limbah cair industri kertas mengandung pencemar berupa logam berat timbal (Pb) dan padatan terlarut (TSS) yang berasal dari proses *pulping* dan *deinking* pada pembuatan kertas. Logam Pb merupakan logam berat yang dapat merusak tata lingkungan perairan yang dimasukinya sehingga menjadikan sungai tercemar. Tanaman air telah banyak digunakan untuk pemulihan perairan yang tercemar dan diketahui memiliki potensi dalam menyerap logam berat. Tujuan dari penelitian ini untuk mengetahui potensi tanaman *Zantedeschia aethiopica*, *Echinodorus palaefolius* dan *Pontederia lanceolata* sebagai agen fitoremediasi limbah cair kertas. Penelitian dilakukan dengan metode deskriptif dengan parameter yang diukur yaitu pertumbuhan vegetatif baru tanaman, persentase tanaman yang sehat, persentase klorosis dan persentase kematian tanaman, kandungan TSS dan Pb dalam limbah cair kertas serta kadar Pb dalam tiga tanaman air. Penelitian dilakukan selama 60 hari. Pengukuran nilai TSS dilakukan secara gravimetric dan pengukuran kadar Pb dalam sampel limbah cair kertas dan tanaman air diukur menggunakan *atomic absorption spectrophotometri* (AAS). *Echinodorus palaefolius* mengalami kenaikan biomassa mencapai 104,9 %, *Pontederia lanceolata* 17,1%, dan *Zantedeschia aethiopica* mengalami penurunan biomassa sebesar 55 %. Kondisi tanaman yang sehat *Zantedeschia aethiopica*, *Echinodorus palaefolius* dan *Pontederia lanceolata* adalah 27,7%, 70,2 % dan 66,7%. Ketiga tanaman mengalami pertumbuhan selama proses remediasi. Kadar Pb dalam limbah cair kertas mengalami penurunan mencapai 98,14% dan kadar Pb pada tanaman mengalami peningkatan. Berdasarkan kriteria tanaman fitoremediasi tanaman yang memiliki potensi yang berbeda, dimana potensi *Echinodorus palaefolius* > *Pontederia lanceolata* > *Zantedeschia aethiopica*.

Kata kunci: Limbah cair kertas, fitoremediasi, *Zantedeschia aethiopica*, *Echinodorus palaefolius*, *Pontederia lanceolata*

Potency of *Zantedeschia aethiopica*, *Echinodorus palaefolius* and *Pontederia lanceolata* as Pb Metal Phytoremediation Agent in Paper Wastewater

ABSTRACT

Paper industry wastewater containing pollutants such as heavy metals lead (Pb) and total suspended solid (TSS), which is derived from the pulping and deinking in papermaking . Pb is a heavy metal that can damage the system it enters aquatic environments polluted river making . Water plants have been widely used for the recovery of polluted waters and are known to have the potential to absorb heavy metals. The purpose of this study to determine the potential of plant *Zantedeschia aethiopica*, *Echinodorus palaefolius* and *Pontederia lanceolata* as liquid waste paper phytoremediation agent . The study was conducted using descriptive method with the parameters measured, the new vegetative growth of plants , the percentage of healthy plants , chlorosis and necrosis percentages and percentage of plant death , and Pb content of TSS in the effluent lead concentrations in the paper as well as three water plants. The study was conducted for 60 days . TSS value measurements performed by gravimetric and measurement of lead concentrations in wastewater samples of paper and water plants were measured using atomic absorption spectrophotometry (AAS). *Echinodorus palaefolius* and *Pontederia lanceolata* increased biomass reached 104.9 % and 17.1 % and *Zantedeschia aethiopica* biomass decreased by 55 % . *Zantedeschia aethiopica*, *Echinodorus palaefolius* and *Pontederia lanceolata* have a percentage health plant condition, 27.7 % , 70.2 % and 66.7 % . Third crop growth during the remediation process . Lead concentrations in the effluent decreased paper reaches 98.14 % and Pb levels at the plant increased. Based on the criteria of phytoremediation crop plants that have different potential , where the potential *Echinodorus palaefolius* > *Pontederia lanceolata* > *Zantedeschia aethiopica* .

Key Words : Liquid waste paper, Phytoremediation, *Zantedeschia aethiopica*, *Echinodorus palaefolius*, *Pontederia lanceolata*