

USE OF JASMINE WATER PLANTS TO REDUCE THE BOD AND COD CONTENT OF CARTON COMPANY LIQUID WASTE IN PASURUAN

Novia Windyanti¹, Umi Rahayu², Pratiwi Hermiyanti³

The Indonesian Ministry of Health
Surabaya Health Ministry Polytechnic
Department of Environmental Health
Environmental Sanitation Study Program Applied Bachelor Program
Email : nwindyanti28@gmail.com

ABSTRACT

Preliminary test results in the Carton Box Company with BOD parameters of 312.74 mg / l and COD 639.25 mg / l did not meet the requirements according to East Java Governor Regulation Number 72 of 2013. The high parameters are due to improper waste management to reduce BOD and COD. The purpose of this study was to examine the ability of water jasmine plants (*Echinodorus palaeifolius*) to reduce BOD and COD levels in wastewater in the Carton Box Company.

This research is a pure experimental study using a Pretest-Posttest Control Group Design research design. This study uses a variation of water weight of jasmine plants as much as 400 gr, 500 gr and 600 gr with a treatment period of 7 days. Data collection techniques were obtained from laboratory test results. The data obtained were statistically tested using the *One Way Anova* test.

The results of the average examination after treatment of BOD levels with the treatment of 400 gr, 500 gr and 600 gr plants respectively were 168.95 mg / l, 129.41 mg / l, and 65.29 mg / l, the COD levels were respectively 431.62 mg / l, 273.33 mg / l, and 95.98 mg / l. The biggest decrease occurred in the variation of plant weight of 600 gr each per 5 liters of wastewater, namely BOD by 86%, COD by 91%. One Way Anova test showed a result of $p < 0.05$ so that there were significant differences.

This research shows that phytoremediation using water jasmine plants can reduce BOD and COD levels in wastewater. For the company, it is necessary to carry out further processing with phytoremediation techniques for liquid waste before being discharged into water bodies so that it can meet the quality standards of the East Java Governor Regulation Number 72 of 2013.

Keywords : Liquid Waste, Water Jasmine Plant (*Echinodorus palaeifolius*), BOD, COD

**PEMANFAATAN TANAMAN MELATI AIR UNTUK MENURUNKAN
KANDUNGAN BOD DAN COD LIMBAH CAIR PERUSAHAAN KARTON
DI PASURUAN**

Novia Windyanti¹, Umi Rahayu², Pratiwi Hermiyanti³

Kementrian Kesehatan RI
Politeknik Kesehatan Kemenkes Surabaya
Jurusan Kesehatan Lingkungan
Program Studi Sanitasi Lingkungan Program Sarjana Terapan
Email : nwindyanti28@gmail.com

ABSTRAK

Hasil uji pendahuluan di Perusahaan Karton Box dengan parameter BOD sebesar 312,74 mg/l dan COD 639,25 mg/l tidak memenuhi syarat sesuai Peraturan Gubernur Jawa Timur Nomor 72 Tahun 2013. Tinginya parameter tersebut dikarenakan pengolahan limbah yang kurang tepat untuk menurunkan BOD dan COD. Tujuan dari penelitian ini untuk menguji kemampuan tanaman melati air (*Echinodorus palaefolius*) dalam menurunkan kadar BOD dan COD pada air limbah di Perusahaan Karton Box.

Penelitian ini merupakan penelitian eksperimen murni dengan menggunakan desain penelitian *Pretest-Posttest Control Group Design*. Penelitian ini menggunakan variasi berat tanaman melati air sebanyak 400 gr, 500 gr dan 600 gr dengan lama waktu perlakuan 7 hari. Teknik pengumpulan data diperoleh dari hasil uji laboratorium. Data yang didapat diuji statistik menggunakan uji *One Way Anova*.

Hasil pemeriksaan rata-rata sesudah perlakuan kadar BOD dengan perlakuan 400 gr, 500 gr dan 600 gr tanaman secara berurutan sebesar 168,95 mg/l, 129,41 mg/l, dan 65,29 mg/l, kadar COD secara berurutan sebesar 431,62 mg/l, 273,33 mg/l, dan 95,98 mg/l. Penurunan terbesar terjadi pada variasi berat tanaman 600 gr masing-masing per 5 liter air limbah yaitu BOD sebesar 86%, COD sebesar 91%. Uji *One Way Anova* menunjukkan hasil $p < 0,05$ sehingga terdapat perbedaan signifikan.

Penelitian ini menunjukkan bahwa fitoremediasi menggunakan tanaman melati air dapat menurunkan kadar BOD dan COD dalam air limbah. Bagi pihak perusahaan perlu diadakan pengolahan lanjutan dengan teknik fitoremediasi untuk limbah cair sebelum dibuang ke badan air sehingga dapat memenuhi syarat baku mutu Peraturan Gubernur Jawa Timur Nomor 72 Tahun 2013.

Kata Kunci : Limbah Cair, Tanaman Melati Air (*Echinodorus palaefolius*), BOD, COD