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ABSTRAK

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**PENGARUH VARIASI WAKTU KONTAK KAYU APU (*Pistia stratiotes*)
DALAM PROSES FITOREMEDIASI TERHADAP KADAR *TOTAL
SUSPENDED SOLID* (TSS) PADA AIR LIMBAH *HOME INDUSTRY* BATIK
DI DESA KALITENGAH KABUPATEN CIREBON**

Air limbah batik merupakan air bekas proses produksi batik, umumnya air limbah batik mengandung kadar Total Suspended Solid (TSS) yang tinggi sehingga dapat menimbulkan permasalahan. Berdasarkan hasil pengukuran kadar TSS pada salah satu *home industry* yang ada di Desa Kalitengah Kabupaten Cirebon menunjukkan hasil kadar TSS mencapai 3.995 mg/l. Kadar tersebut melebihi nilai ambang batas yang ditentukan untuk industri tekstil yaitu 50 mg/l. Penelitian ini bertujuan untuk menganalisis pengaruh variasi waktu kontak dan waktu kontak terbaik kayu apu terhadap proses fitoremediasi dalam menurunkan kadar TSS air limbah *home industry* batik di Desa Kalitengah Kabupaten Cirebon. Penelitian ini merupakan jenis penelitian kuantitatif dengan metode pre eksperimen dengan rancangan *One Pretest-Posttest Group Design*, yang terdiri atas satu kelompok sebelum perlakuan (0 hari) dan dua kelompok perlakuan dengan variasi waktu kontak 6 hari dan 7 hari. Kemudian, variabel terikat dari penelitian ini yaitu kadar Total Suspended Solid (TSS) pada air limbah *home industry* batik di Desa Kalitengah. Berdasarkan perhitungan menggunakan rumus Federrer didapatkan jumlah sample yaitu 48 sampel. Berdasarkan analisis inferensial menggunakan uji t *dependent* didapati bahwa $p\text{ value} < 0,05$ yang artinya terdapat perbedaan yang signifikan antara kadar TSS sebelum dan sesudah perlakuan baik 6 hari maupun 7 hari. Berdasarkan hasil uji t *independentt* diperoleh nilai signifikansi sebesar 0,000 ($p < 0,05$), yang menunjukkan bahwa terdapat perbedaan yang signifikan antara waktu kontak 6 hari dan 7 hari dalam menurunkan kadar TSS. Hal ini menunjukkan waktu kontak terbaik dalam penelitian adalah 7 hari. Peneliti lain dapat melakukan pengendalian variabel lain seperti pH, suhu, dan intensitas cahaya matahari karena dapat mempengaruhi fitoremediasi. Selain itu, peneliti lain dapat melakukan pengukuran pada kelompok kontrol agar bisa melihat pengaruh perlakuan pada penelitian.

Kata Kunci: Fitoremediasi, Kayu Apu, Waktu Kontak, *Total Suspended Solid* (TSS)

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ABSTRACT

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THE EFFECT OF VARYING CONTACT TIMES OF WATER SPINACH (*Pistia stratiotes*) IN THE PHYTOREMEDIATION PROCESS ON TOTAL SUSPENDED SOLIDS (TSS) LEVELS IN WASTEWATER FROM BATIK HOME INDUSTRIES IN KALITENGGAH VILLAGE, CIREBON REGENCY

Batik wastewater is water left over from the batik production process; generally, batik wastewater contains high levels of Total Suspended Solids (TSS), which can cause problems. Based on TSS level measurements at a home-based industry in Kalitengah Village, Cirebon Regency, the TSS level was found to be 3,995 mg/l. This level exceeds the threshold value set for the textile industry, which is 50 mg/l. This study aims to analyze the effect of varying contact times and the optimal contact time of water lettuce on the phytoremediation process in reducing the TSS levels in batik home industry wastewater in Kalitengah Village, Cirebon Regency. This study is a quantitative study using a pre-experimental method with a One Pretest-Posttest Group Design, which consists of one group before treatment (0 days) and two treatment groups with contact times of 6 days and 7 days. The dependent variable in this study is the Total Suspended Solids (TSS) concentration in the wastewater from the batik home industry in Kalitengah Village. Based on calculations using Federrer's formula, the sample size was determined to be 48 samples. Based on inferential analysis using the dependent t-test, a p-value of < 0.05 was obtained, indicating a significant difference in TSS levels before and after treatment for both the 6-day and 7-day periods. Based on the results of the independent t-test, a significance value of 0.000 ($p < 0.05$) was obtained, indicating that there is a significant difference between contact times of 6 days and 7 days in reducing TSS levels. This suggests that the optimal contact time in this study is 7 days. Other researchers may wish to control for other variables, such as pH, temperature, and sunlight intensity, as these can influence phytoremediation. Additionally, other researchers may wish to conduct measurements on a control group to assess the effects of the treatments in this study.

Keywords: Phytoremediation, Water Lettuce, Contact Time, Total Suspended Solids (TSS)