

POLITEKNIK KESEHATAN TANJUNG KARANG
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Kemampuan Eceng Gondok (*Eichhornia Crassipes*) Sebagai Fitoremediasi Dalam Pengolahan Limbah Cair Industri Tempe

XVI + 71 halaman + 10 tabel + 9 gambar + dan lampiran

ABSTRAK

Limbah tempe adalah limbah yang dihasilkan dari proses pembuatan tempe. Teknik pengolahan limbah cair dibagi menjadi tiga metode yaitu pengolahan secara fisika, kimia dan biologi. Tanaman eceng gondok dapat dipergunakan sebagai fitoremediasi dalam pengolahan limbah karena tanaman eceng gondok diketahui mampu menyerap zat organik maupun anorganik yang terdapat didalam air limbah. Tujuan penelitian ini adalah untuk menurunkan kadar BOD, COD, TSS dan menetralkan pH dalam pengolahan limbah cair tempe.

Penelitian ini berupa *Quasi-Experimental Design* menggunakan rancangan *pretest-posttest with control group* dengan 3 kali pengulangan, untuk mengetahui kemampuan tanaman eceng gondok 1 kg sebagai fitoremediasi dalam pengolahan limbah cair tempe. Variabel bebas pada penelitian yaitu variasi volume air limbah 20, 25, 30 liter dan variabel terikat yaitu penurunan kadar BOD, COD, TSS dan menetralkan pH. Penelitian ini dilakukan di Laboratorium Jurusan Kesehatan Lingkungan Politeknik Kesehatan Tanjung Karang pada bulan Maret-Mei 2023. Sampel yang digunakan adalah limbah cair tempe dari industri rumah tangga yang berada di Jalan Catur Tunggal Kecamatan Kemiling Bandar Lampung.

Hasil penelitian diperoleh hasil fitoremediasi menggunakan tanaman eceng gondok berat 1kg dalam volume air limbah 20 liter dapat menurunkan kadar BOD 57,13%, COD sebesar 67,74 %, TSS sebesar 80,82%, dan meningkatkan kadar pH sebesar 20,51%. Sesuai dengan Peraturan Gubernur No 7 Gubernur Tahun 2010 Tentang Baku Mutu Air Limbah Kegiatan Pengolahan Kedelai yang memenuhi syarat hanya BOD dengan volume air limbah 20 liter, pada volume air limbah lainnya belum memenuhi standar. Perlu dilakukan penelitian lanjutan dengan cara menambah variasi berat tanaman eceng gondok dan lama waktu kontak perlakuan fitoremediasi juga dapat melakukan fitoremediasi menggunakan tanaman eceng gondok pada limbah cair industri lainnya.

Kata Kunci : Tanaman Eceng Gondok, limbah tempe, penurunan kadar BOD, COD, TSS, pH

Daftar Bacaan: 31 (1987-2022)

POLYTECHNIC OF HEALTH MINISTRY OF HEALTH TANJUNGPUR
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The Ability of Water Hyacinth (*Eichhornia Crassipes*) As Phytoremediation In
Tempe Industri Wastewater Treatment

XVI + 71 pages + 10 tables + 9 pictures and attachments

ABSTRACT

Tempe waste is waste generated from the process of making tempe. Liquid waste processing techniques are divided into three methods, namely physical, chemical and biological processing. Water hyacinth plants can be used as phytoremediation in waste treatment because water hyacinth plants are known to be able to absorb organic and inorganic substances contained in wastewater. The purpose of this study was to reduce the levels of BOD, COD, TSS and neutralize the pH in tempe wastewater treatment.

This research was in the form of a *Quasi-Experimental Design* using a pretest-posttest design with a control group with 3 repetitions, to determine the ability of 1 kg water hyacinth plants as phytoremediation in tempe wastewater treatment. The independent variables in the study were variations in the volume of wastewater 20, 25, 30 liters and the dependent variables were decreasing levels of BOD, COD, TSS and neutralizing pH. This research was conducted at the Laboratory of the Environmental Health Department of the Tanjung Karang Health Polytechnic in March-May 2023. The sample used was tempe liquid waste from a home industry located on Jalan Catur Tunggal, Kemiling District, Bandar Lampung.

The results showed that the results of phytoremediation using water hyacinth weighing 1 kg in a volume of 20 liters of wastewater reduced BOD levels by 57.13%, COD by 67.74%, TSS by 80.82%, and increased pH levels by 20.51%. In accordance with Governor Regulation No. 7 Governor of 2010 Concerning Wastewater Quality Standards for Soybean Processing Activities that meet the requirements are only BOD with a volume of 20 liters of waste water, the volume of other waste water does not meet the standards. It is necessary to carry out further research by increasing the variation in the weight of the water hyacinth plant and the length of contact time for the phytoremediation treatment. You can also carry out phytoremediation using water hyacinth plants in other industrial wastewater.

Keyword : Water hyacinth plants, tempeh waste, decreased levels of BOD, COD, TSS, pH

Reading list : 31 (1987-2022)