ABSTRAK

Dwi Yolanda Putri, 2021. “Penurunan Kadar COD, BOD dan TSS Limbah Cair Industri Tempe Dengan Pemanfaatan Effective Microorganism (EM) Limbah Kulit Pisang Kepok (*Musa Acuminata*)”. Tugas Akhir, Teknik Lingkungan, Fakultas Teknik Universitas PGRI Adi Buana Surabaya, Dosen Pembimbing: Dra. Indah Nurhayati, S.T., M.T.

Limbah cair produksi tempe berpotensi menimbulkan pencemaran air jika dibuang langsung ke sungai tanpa adanya pengolahan terlebih dahulu. Larutan EM mengandung *Lactobacillus sp* sekitar 90% yang berperan mempercepat proses perombakan zat organik serta menekan pertumbuhan bakteri pathogen. Kulit pisang kepok mengandung karbohidrat 9,8% sehingga tepat digunakan sebagai bahan pembuatan larutan EM. Penelitian ini bertujuan untuk mengetahui efektivitas EM kulit pisang kepok dalam menurunkan kadar COD, BOD dan TSS limbah cair tempe. Variabel penelitian ini adalah dosis EM sebesar 0%, 10%, 20% dan 30% serta waktu tinggal yaitu 0 hari, 4 hari, 8 hari, 12 hari dan 16 hari. Penelitian ini dilakukan secara aerob dengan sistem batch menggunakan reaktor 5 liter dilengkapi aerator. Hasil penelitian menunjukkan penurunan tertinggi pada hari ke-16, parameter COD yaitu pada R3 dengan efisiensi 78.13%, BOD pada R4 dengan efisiensi 78.01 %, dan TSS pada R2 dengan efisiensi 66.81 %. Dari hasil pengolahan tersebut masih belum memenuhi baku mutu yang telah ditetapkan.

Kata Kunci: BOD, COD, Effective Microorganism, Limbah cair tempe, TSS

ABSTRACT

Dwi Yolanda Putri, 2021. "Reducing COD, BOD and TSS Levels of Tempe Industrial Liquid Waste by Utilizing Effective Microorganisms (EM) Kepok Banana Peel (Musa Acuminata)". Thesis, Environmental Engineering Department, Faculty of Engineering, Universitas PGRI Adi Buana Surabaya, Advisor: Dra. Indah Nurhayati, S.T., M.T.

Liquid waste from the tempe production process has the potential to cause water pollution if it is discharged directly into the river without any prior processing. EM solution contains bacteria Lactobacillus sp as much as 90% will accelerate the process of overhauling organic substances and suppress the growth of pathogenic bacteria. Kepok banana peel contains 9,8% carbohydrates so it is appropriate to be used as an ingredient for making EM solutions. This study aims to determine the effectiveness of the EM of kepok banana peel waste in reducing the levels of COD, BOD and TSS of tempe liquid waste. Variables of this study were EM doses of 0%, 10%, 20% and 30% and the residence time were 0 days, 4 days, 8 days, 12 days and 16 days. This research was conducted aerobically with a batch system using a reactor made of plastic with a volume of 5 liters and added an aerator. The result showed the highest decrease on the 16 days, COD with an efficiency of 78.13 %, BOD with an efficiency of 78.01 % and TSS with an efficiency of 66.81 %. From the result of the processing, it still does not meet the quality standards that have been set.

Keywords: *BOD, COD, Effective Microorganism, Tempe liquid waste, TSS*