

Zulkarnaen, A. N., 2019. Penurunan Kadar *Biochemical Oxygen Demand* dan Perubahan Nilai pH pada Limbah Cair Industri Tempe Menggunakan Koagulan Alami Biji Flamboyan (*Delonix regia*). Skripsi ini dibawah bimbingan Drs. Agus Supriyanto, M.Kes. dan Nita Citrasari, S.Si., M.T. Program Studi S1 Teknik Lingkungan, Departemen Biologi, Fakultas Sains dan Teknologi, Universitas Airlangga.

ABSTRAK

Penelitian ini bertujuan untuk mengetahui ada beda signifikan antar variasi dosis koagulan terhadap persentase penurunan kadar *Biochemical Oxygen Demand* (BOD) dan persentase perubahan nilai pH limbah cair tempe serta mengetahui dosis optimum koagulan. Koagulan yang digunakan dalam proses koagulasi dan flokulasi yaitu biji flamboyan dengan variasi dosis 0, 1000, 1500, 2000, dan 2500 mg/L dengan aktivasi larutan NaCl 0,2 N. Sampel limbah cair tempe yang digunakan yaitu limbah cair industri tempe Bapak Nurhasan di Kampung Tempe, Tenggilis Mejoyo. Metode penelitian ini menggunakan *jar test* dengan kecepatan pengadukan cepat 300 rpm selama 3 menit dan kecepatan pengadukan lambat 80 rpm selama 12 menit. Parameter BOD dan pH masing-masing di analisis dengan metode winkler titrasi iodometri dan metode elektrometri. Hasil uji parameter kemudian di analisis dengan uji statistik Anova satu arah dan uji Duncan. Hasil yang dianalisis dengan uji Anova satu arah dan Duncan menunjukkan bahwa ada beda signifikan penurunan kadar BOD dengan variasi dosis koagulan menghasilkan persentase penurunan sebesar 40,95% pada dosis optimum 1500 mg/L. Pada persentase kenaikan nilai pH menunjukkan ada beda signifikan antar variasi dosis koagulan yang menghasilkan persentase kenaikan sebesar 10,53% pada dosis optimum 2000 mg/L.

Kata kunci: BOD, *Delonix regia*, koagulan alami, limbah cair industri tempe, pH

Zulkarnaen, A. N., 2019. *Reduction of Biochemical Oxygen Demand and Changes of pH Values on Fermented Soybean Industrial Wastewater by using Natural Coagulant Royal poinciana Seeds (Delonix regia)*. This work was supervised by Drs. Agus Supriyanto, M.Kes. and Nita Citrasari, S.Si., M.T. *Environmental Science and Technology, Departement of Biology, Faculty of Sains and Technology, Airlangga University.*

ABSTRACT

This aims of this research were to determine that there is significant difference between the coagulant variations dosage to the percentage of decreasing BOD level and percentage of changes pH value on fermented soybean industrial wastewater and to determine the optimum dosage. The coagulants used in this coagulation and flocculation is royal poinciana seeds with dosage variatios of 0, 1000, 1500, 2000, and 2500 mg/L with activation using 0,2 N NaCl solution. The fermented soybean wastewater sample was from Mr. Nurhasan's fermented soybean industrial wastewater in Kampung Tempe, Tenggilis Mejoyo. The method was using jar test with rapid mixing was 300 rpm for 3 minutes and slow mixing was 80 rpm for 12 minutes. BOD and pH parameters were analyzed by the winkler iodometric titration method and the electrometry method. The results were analyzed using ANOVA one-way test and Duncan test. The result showed that there was significant difference in the decrease of BOD levels with variations of coagulant dosage has a decrease of 40.95% with optimum dosage is 1500 mg/L. The percentage of increase pH value showed that was significant difference between the variations of coagulant dosage which could increase of 10.53% with optimum dosage is 2000 mg/L.

Keywords: *BOD, Delonix regia, natural coagulant, fermented soybean industrial wastewater, pH*