

ABSTRAK

PEMANFAATAN CANGKANG KEONG SAWAH DAN DAUN KETAPANG (*Terminalia Catappa*) SEBAGAI BIOKOAGULAN DALAM PENGOLAHAN LIMBAH CAIR *PALM OIL MILL EFFLUENT* (POME)

Dela Puspita, 2026, 48 Halaman, 9 Tabel, 12 Gambar, 4 Lampiran

Limbah cair pabrik kelapa sawit (*Palm Oil Mill Effluent/POME*) mengandung bahan organik, padatan tersuspensi, dan tingkat kekeruhan yang tinggi sehingga berpotensi mencemari lingkungan apabila tidak diolah dengan baik. Penelitian ini bertujuan untuk mengetahui pengaruh biokoagulan berbahan cangkang keong sawah dan daun ketapang terhadap penurunan parameter pencemar POME serta menentukan dosis optimum penggunaannya. Biokoagulan dibuat dari campuran serbuk cangkang keong sawah dan daun ketapang dengan variasi massa daun ketapang 5 g dan 7 g serta dosis 1000, 2000, 3000, 4000, dan 5000 ppm. Pengolahan limbah dilakukan menggunakan metode koagulasi-flokulasi melalui uji jar. Parameter yang dianalisis meliputi pH, *Total Suspended Solids* (TSS), *Total Dissolved Solids* (TDS), kekeruhan, dan *Chemical Oxygen Demand* (COD). Hasil analisis menunjukkan kandungan kalsium (Ca) pada cangkang keong sawah sebesar 91,23%, sedangkan kadar tanin daun ketapang sebesar 5.460 ppm (5 g) dan 5.655 ppm (7 g). Penambahan biokoagulan mampu meningkatkan pH serta menurunkan COD, TSS, TDS, dan kekeruhan. Kondisi optimum diperoleh pada massa daun ketapang 7 g dan dosis 4000 ppm dengan pH 6,78, kekeruhan 60,3 NTU, TSS 600 mg/L, TDS 650,5 mg/L, dan COD 400 mg/L. Hasil penelitian menunjukkan bahwa cangkang keong sawah dan daun ketapang berpotensi digunakan sebagai koagulan alami untuk pengolahan limbah cair POME.

Kata kunci: Biokoagulan, Cangkang Keong Sawah, Daun Ketapang, POME, Koagulasi-Flokulasi.

ABSTRACT

UTILIZATION OF RICE FIELD SNAIL SHELLS AND KETAPANG LEAVES (*Terminalia catappa*) AS NATURAL BIOCOAGULANTS IN PALM OIL MILL EFFLUENT (POME) TREATMENT

Dela Puspita, 2026, 48 Pages, 9 Tables, 12 Figures, 4 Attachments

Palm Oil Mill Effluent (POME) contains high levels of organic matter, suspended solids, and turbidity, which may cause environmental pollution if not properly treated. This study aimed to evaluate the effect of a biocoagulant derived from rice field snail shells and ketapang leaves on the reduction of POME pollutant parameters and to determine its optimum dosage. The biocoagulant was prepared from a mixture of powdered rice field snail shells and ketapang leaves with leaf mass variations of 5 g and 7 g and dosages of 1000, 2000, 3000, 4000, and 5000 ppm. Wastewater treatment was carried out using the coagulation-flocculation method through a jar test. The parameters analyzed included pH, Total Suspended Solids (TSS), Total Dissolved Solids (TDS), turbidity, and Chemical Oxygen Demand (COD). The results showed that the calcium (Ca) content of the rice field snail shells was 91.23%, while the tannin content of ketapang leaves was 5,460 ppm (5 g) and 5,655 ppm (7 g). The addition of the biocoagulant increased pH and reduced COD, TSS, TDS, and turbidity. The optimum condition was achieved at a ketapang leaf mass of 7 g and a dosage of 4000 ppm, resulting in a pH of 6.78, turbidity of 60.3 NTU, TSS of 600 mg/L, TDS of 650.5 mg/L, and COD of 400 mg/L. The results indicate that rice field snail shells and ketapang leaves have the potential to be used as natural coagulants for POME wastewater treatment.

Keywords: *Biocoagulant, Rice Field Snail Shell, Ketapang Leaf, POME, Coagulation-Flocculation.*