ABSTRAK

Argian Harnandha
KOAGULAN SERBUK PORANG UNTUK MENURUNKAN KEKERUHAN PADA AIR OUTLET PRASEDIMENTASI INSTALASI PENGOLAHAN AIR (IPA)
Xiv + 55 Halaman + 15 Tabel + 6 Gambar + 5 Lampiran

Kekeruhan merupakan masalah umum di Instalasi Pengolahan Air (IPA), termasuk di IPA Cileng yang saat musim hujan mengalami lonjakan kekeruhan hingga 30 NTU pada outlet prasedimentasi, melebihi batas 25 NTU sesuai Permenkes No. 32 Tahun 2017. Penanganan umumnya menggunakan koagulasi-flokulasi dengan PAC (*Poly Aluminium Chloride*), namun penggunaannya menimbulkan risiko kesehatan dan lingkungan akibat akumulasi logam aluminium dan residu koagulan. Penelitian ini bertujuan menguji serbuk porang (*Amorphophallus Muelleri Blume*) sebagai koagulan alternatif dalam menurunkan kekeruhan air.

Penelitian menggunakan metode *quasi experiment* dengan desain *pretest-posttest control group*, melibatkan tiga variasi konsentrasi koagulan 0,05, 0,10, dan 0,15 gr/L, masing-masing dengan 8 replikasi. Proses koagulasi dilakukan pada 150 rpm selama 5 menit, flokulasi 30 rpm selama 3 menit, dan pengendapan 1 jam.

Hasil menunjukkan kekeruhan awal sebesar 7,66 NTU. Setelah perlakuan, konsentrasi 0,05 gr/L menurunkan hingga 2,65 NTU (65,39%), 0,10 gr/L sebesar 2,75 NTU (60,05%), dan 0,15 gr/L sebesar 3,34 NTU (56,31%). Uji Kruskal Wallis menunjukkan terdapat perbedaan signifikan antar konsentrasi. Disimpulkan bahwa penggunaan serbuk porang sebagai koagulan dapat menurunkan kekeruhan pada air outlet prasedimentasi. Penelitian selanjutnya disarankan menambahkan variasi kecepatan pengadukan dan waktu pengendapan untuk mengoptimalkan hasil.

Kata kunci: Kekeruhan, Koagulasi-Flokulasi, Serbuk Porang (*Amorphophallus Muellerie Blume*)

ABSTRACT

Argian Harnandha

PORANG POWDER COAGULANT TO REDUCE TURBIDITY IN PRESEDIMENTATION OUTLET WATER OF WATER TREATMENT INSTALLATION (IPA)

Xiv + 55 Pages + 15 Tables + 6 Images + 5 Attachments

Turbidity is a common problem in Water Treatment Plants (IPA), including in Cileng IPA which during the rainy season experiences a spike in turbidity of up to 30 NTU at the pre-sedimentation outlet, exceeding the limit of 25 NTU according to Permenkes No. 32 of 2017. Handling generally uses coagulation-flocculation with PAC (Poly Aluminum Chloride), but its use poses health and environmental risks due to the accumulation of aluminum metal and coagulant residues. This study aims to test porang powder (Amorphophallus Muelleri Blume) as an alternative coagulant in reducing water turbidity.

The study used a quasi-experimental method with a pretest-posttest control group design, involving three variations of coagulant concentrations of 0.05, 0.10, and 0.15 gr/L, each with 8 replications. The coagulation process was carried out at 150 rpm for 5 minutes, flocculation at 30 rpm for 3 minutes, and sedimentation for 1 hour.

The results showed an initial turbidity of 7.66 NTU. After treatment, a concentration of 0.05 gr/L decreased to 2.65 NTU (65.39%), 0.10 gr/L by 2.75 NTU (60.05%), and 0.15 gr/L by 3.34 NTU (56.31%). The Kruskal wallis test showed a significant difference between concentrations. It was concluded that the use of porang powder as a coagulant could reduce turbidity in pre-sedimentation outlet water. Further research is recommended to add variations in stirring speed and sedimentation time to optimize results.

Keywords: Turbidity, Coagulation-Flocculation, Porang Powder (Amorphophallus Muellerie Blume)