

RINGKASAN

PENGARUH VARIASI KONSENTRASI NaOH PADA PROSES DEASETILISASI TERHADAP KARAKTERISTIK KITOSAN DARI CANGKANG KEPITING (*SCYLLA*) SEBAGAI BIOKOAGULAN UNTUK PENGOLAHAN AIR BAKU

(Al-Ichsan, Halaman, Tabel, Gambar, 3 lampiran)

Kitosan adalah biopolimer alami hasil deasetilasi kitin yang banyak ditemukan pada hewan bercangkang seperti kepiting dan udang, dikenal memiliki kemampuan sebagai koagulan alami yang ramah lingkungan. Penelitian ini mengeksplorasi pengaruh variasi konsentrasi NaOH dalam proses deasetilasi terhadap karakteristik kitosan yang diperoleh dari limbah cangkang kepiting (*Scylla* sp.), serta menguji efektivitas kitosan sebagai biokoagulan untuk menurunkan parameter pencemaran air seperti TDS, konduktivitas, dan kekeruhan. Proses ekstraksi kitosan meliputi deproteinasi, demineralisasi, serta deasetilasi menggunakan NaOH dengan variasi konsentrasi 55%, 60%, 65%, 70%, dan 75%. Sampel kitosan yang dihasilkan kemudian diuji kadar air, kadar abu, rendemen, dan derajat deasetilasi. Hasil penelitian menunjukkan bahwa peningkatan konsentrasi NaOH menghasilkan derajat deasetilasi hingga 76,32% pada konsentrasi 75%, disertai penurunan kadar air hingga 7,06%, dan kadar abu terendah sebesar 1,74% pada konsentrasi 60%. Uji aplikasi pada air Sungai Musi menunjukkan kitosan dosis optimal 600 mg/L mampu menurunkan TDS sebesar 73,76%, konduktivitas 81,10%, dan kekeruhan 81,17%. Hasil ini membuktikan kitosan dengan derajat deasetilasi tinggi dari limbah cangkang kepiting berpotensi menjadi koagulan alternatif yang ramah lingkungan untuk pengolahan air.

Kata Kunci: kitosan, cangkang kepiting, NaOH, derajat deasetilasi, biokoagulan.

ABSTRACT

THE EFFECT OF NaOH CONCENTRATION VARIATION DURING THE DEACETYLATION PROCESS ON THE CHARACTERISTICS OF CHITOSAN FROM CRAB (SCYLLA) SHELLS AS A BIO-COAGULANT FOR RAW WATER TREATMENT

Al Ichsan, Pages, Tables, Figures, and 3 Appendices

Chitosan is a natural biopolymer derived from the deacetylation of chitin, commonly found in the shells of crustaceans such as crabs and shrimps, and is recognized for its environmentally friendly coagulating properties. This study investigates the effect of varying NaOH concentrations in the deacetylation process on the characteristics of chitosan obtained from crab shell (*Scylla* sp.) waste, as well as evaluates its effectiveness as a bio-coagulant in reducing water pollution parameters like TDS, conductivity, and turbidity. The chitosan extraction process consists of deproteinization, demineralization, and deacetylation using NaOH concentrations of 55%, 60%, 65%, 70%, and 75%. The resulting chitosan samples were analyzed for moisture content, ash content, yield, and degree of deacetylation. The findings indicate that higher NaOH concentrations increased the degree of deacetylation up to 76.32% at 75% NaOH, reduced moisture content to 7.06%, and resulted in the lowest ash content of 1.74% at 60% NaOH. Application tests in Musi River water showed that an optimal chitosan dose of 600 mg/L reduced TDS by 73.76%, conductivity by 81.10%, and turbidity by 81.17%. These results demonstrate that high-degree deacetylation chitosan derived from crab shell waste has strong potential as an environmentally friendly coagulant alternative for water treatment.

Keywords: chitosan, crab shell, NaOH, degree of deacetylation, bio-coagulant