

Penurunan Kadar Nitrat (NO_3^-) Dalam Air Menggunakan Serbuk Gergaji Kayu Jati (*Tectona grandis*) dengan Variasi Konsentrasi dan Waktu Perendaman

Bela Agustin¹, Ana Hidayati Mukaromah², Diah Hetty Sitomurti³.

Abstrak

Latar Belakang: Nitrat (NO_3^-) adalah ion anorganik alami, yang merupakan bagian dari siklus nitrogen. Jika kadar nitrat dalam air melebihi 50 mg / L, dapat menyebabkan rasa kekuningan, bau, dan air, menyebabkan noda pada pakaian dan meningkatkan proliferasi bakteri. Oleh karena itu, perlu dilakukan penurunan konsentrasi nitrat menggunakan serbuk gergaji jati yang mengandung lignin ekstraktif yang dapat menurunkan kadar nitrat.

Tujuan Penelitian: Penelitian ini bertujuan untuk menguji penurunan konsentrasi NO_3^- dengan menggunakan serbuk gergaji jati dengan variasi konsentrasi dan waktu perendaman.

Metode: Penelitian dilakukan di Laboratorium Kimia Fakultas Keperawatan dan Kesehatan Universitas Muhammadiyah Semarang. Penelitian dilakukan pada bulan Februari 2017 - Agustus 2017. Sampel penelitian menggunakan larutan NO_3^- 50 ppm direndam dengan serbuk gergaji serbuk gergaji dengan variasi konsentrasi (3% b / v; 6% b / v; 9% b / v; 12 % b / v) dan waktu perendaman (3 jam, 6 jam, 9 jam, 12 jam).

Hasil dan Kesimpulan: Hasil penelitian menunjukkan bahwa persentase penurunan kadar nitrat tertinggi adalah 33,815% diperoleh pada penambahan kayu jati serbuk gergaji 3% b / v dengan waktu perendaman 12 jam. Kapasitas adsorpsi tertinggi serbuk kayu jati tertinggi dengan penambahan serbuk gergaji jati 3% b / v dan 12 jam waktu perendaman 0,6324 mg / g. Pengurangan persentase tertinggi (NO_3^-) sebesar 33,815% diperoleh dari penambahan kayu jati serbuk gergaji 3% b / v selama 12 jam.

Kata kunci: NO_3^- , sawdust jati, Variation Concentration, kapasitas adsorpsi.

Decreased Nitrate Level (NO₃-) In Water Using Sawmill Teak (*Tectonagrandis*) with Variation Concentration and Immersion Time

Bela Agustin¹, Ana Hidayati Mukaromah², Diah Hetty Sitomurti³.

Abstract

Background: Nitrates (NO₃-) are natural inorganic ions, which are part of the nitrogen cycle. If nitrate content in water exceeds 50 mg / L, it can cause yellowish taste, odor, and water, cause stains on clothing and increase bacterial proliferation. Therefore, it is necessary to decrease the nitrate concentration using teak sawdust containing extractively lignin which can decrease the nitrate level.

Research Objectives: This study aims to examine the decrease in NO₃-concentration using teak sawdust with concentration variation and soaking time.

Method: The research was conducted in Chemical Laboratory of Faculty of Nursing and Health of Muhammadiyah University of Semarang. The study was conducted in February 2017-August 2017. The samples of the research using NO₃-50 ppm solution were immersed using sawdust sawdust with concentration variation (3% w / v; 6% w / v; 9% w / v; 12% b / v) and soaking time (3 hours, 6 hours, 9 hours, 12 hours).

Results and Conclusions: The results showed that the highest percentage reduction of nitrate content was 33.815% obtained in the addition of sawdust teak wood 3% w / v with 12 hours of soaking time. The highest adsorption capacity of teak sawdust was highest with the addition of teak sawdust 3% w / v and 12 hours of soaking time of 0.6324 mg / g. The highest percentage reduction (NO₃-) of 33.815% was obtained from the addition of sawdust teakwood 3 % b / v for 12 hours.

Keywords: NO₃-, sawdust teak, Variation Concentration, adsorption capacity.