

**UJI TOKSISITAS Zn TOTAL DALAM TANAH SEKITAR INDUSTRI
TEKSTIL DI BANTUL YOGYAKARTA TERHADAP TANAMAN SAWI
HIJAU (*Brassica sinensis* L.)**

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INTISARI

Uji toksisitas Zn total dalam tanah sekitar industri tekstil di Bantul, Yogyakarta terhadap tanaman sawi hijau telah dilakukan. Tujuan dari penelitian ini untuk mengkaji sifat fisika-kimia dan kandungan logam Zn, mempelajari adsorpsi dan desorpsi logam Zn, dan mengkaji toksisitas logam Zn dalam tanah sekitar industri tekstil terhadap pertumbuhan sawi hijau.

Sampel tanah dibagi menjadi tiga kelompok yang berbeda yaitu titik sampel A, B, dan C berdasarkan tempat pengambilannya. Sifat fisika-kimia yang dipelajari meliputi kadar air, pH tanah, kadar abu, karbon organik total, kapasitas tukar kation, serta kandungan logam Zn dalam tanah. Kapasitas adsorpsi ditentukan dengan proses adsorpsi oleh sampel tanah pada berbagai variasi dan desorpsi diukur dengan instrumen spektrofotometer serapan atom. Uji toksisitas dilakukan dengan mengamati pengaruh tanaman yang ditanam di tanah sekitar industri tekstil.

Hasil penelitian menunjukkan bahwa titik sampel C memiliki kadar logam Zn tertinggi yaitu $116,46 \pm 6,03 \text{ mg kg}^{-1}$. Adsorpsi logam Zn oleh seluruh titik sampel tanah mengikuti isotherm Freundlich dengan kapasitas optimum pada konsentrasi larutan standar Zn 100 mg L^{-1} . Sedangkan desorpsi dari semua titik sampel tanah mengalami peningkatan pada konsentrasi asam sitrat $0,5 \text{ mol L}^{-1}$. Hasil uji toksisitas tidak menunjukkan tanda – tanda toksisitas pada tanaman sawi hijau.

Kata kunci: adsorpsi, desorpsi, logam Zn, uji toksisitas

***TOXICITY TEST OF TOTAL Zn IN SOIL AROUND TEXTILE INDUSTRY
IN BANTUL YOGYAKARTA TOWARDS MUSTARD GREENS (*Brassica
sinensis* L.)***

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ABSTRACT

Toxicity test of total zinc in soil around textile industry in Bantul Yogyakarta towards mustard green has been carried out. The aims of this research were to analyze the physicochemical properties and total zinc metal content of soil around the textile industry, to study adsorption and desorption of soil against zinc metal and to investigate the toxicity test of zinc metal in soil around the textile industry against mustard greens.

Soil samples were divided into three different groups, namely sample points A, B and C based on the place of collection. The physico-chemical properties studied included moisture content, soil pH, ash content, total organic carbon, cation exchange capacity, and zinc metal content in the soil. Adsorption capacity was determined by adsorption process of soil samples at various variations and desorption was measured by atomic absorption spectrophotometer instrument. Toxicity tests were conducted by observing the effect of plants grown in the soil around the textile industry.

The results showed that sample point C had the highest zinc metal content of $116.46 \pm 6.03 \text{ mg kg}^{-1}$. Zinc metal adsorption by all soil sample points followed the Freundlich isotherm with optimum capacity at a concentration of 100 mg L⁻¹ Zn standard solution. While the desorption of all soil sample points increased at a citric acid concentration of 0.5 mol L⁻¹. Toxicity test results showed no signs of toxicity in mustard green plants.

Keywords: adsorption, desorption, toxicity test, Zn metal.