REMOVAL OF HEAVY METAL USING 2-ACETYL-1-PYRROLINE DERIVED FROM PANDANUS AMIRYLLIFOLIUS

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Discharge of heavy metals from metal processing industries is known to have adverse effects on the environment. Conventional treatment technologies for removal of heavy metals from aqueous solution are not economical and generate huge quantity of toxic chemical sludge. Biosorption of heavy metals by metabolically inactive non-living biomass of microbial or plant origin is an innovative and alternative technology for removal of these pollutants from aqueous solution. The purpose of this study is to remove copper from waste water by using 2-acetyl-1-pyrroline (2AP) extracted from Pandanus leaves. The effect of dosage of biosorbent, pH aqueous solution, and the biosorption contact time were studied. The concentration of heavy metal ions was analyzed by using atomic adsorption spectroscopy (AAS). The maximum biosorption of copper ions is obtained up to 69.86% for 5ppm of initial copper ions loading by 1 hour. The Langmuir isotherms and Freundlich Isotherms were applied to correlate the equilibrium data. It is seen that the adsorption equilibrium data conformed well to the Freundlich isotherm.
ABSTRAK

Industri semakin pesat dengan mengeluarkan sejumlah besar air sisa buangan yang mengandungi kandungan bahan yang tinggi yang menyebabkan masalah alam sekitar yang serius. Sehubungan dengan itu, kaedah tradisional untuk menyingkirkan ion logam berat tidak ekonomi dan meninggalkan bahan sisa buangan yang beracun. Bioserapan yang menggunakan bakteri dan tumbuhan adalah kaedah yang murah. Tujuan kajian ini dijalankan adalah untuk mengkaji penyerapan ion logam besi iaitu copper dalam larutan menggunakan 2-acetyl-1-pyrroline daripada Daun Pandan. Kesedaran persaingan ion logam berat, nilai pH larutan, dan masa penyerapan larutan telah dikajikan. Kepekatan ion logam dianalisis menggunakan alat spektroskopi penyerapan atom (AAS). Keputusan kajian menunjukkan bahawa penyerapan larutan tertinggi adalah 69.86% untuk kepekatan ion logam di 5ppm dalam satu jam. Isoterma penyerapan Freundlich dibuktikan adalah isoterma yang paling sesuai untuk kajian ini.
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