

ADSORPSI *METHYL ORANGE* (MO) MENGGUNAKAN BIOSORBEN DAUN MANGGA TERMODIFIKASI CTAB

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Pada penelitian ini telah berhasil dilakukan adsorpsi *methyl orange* (MO) menggunakan biosorben daun mangga termodifikasi CTAB. Pembuatan biosorben daun mangga dilakukan dengan aktivasi kimia menggunakan larutan NaOH 0,1 M dan dimodifikasi dengan surfaktan CTAB. Biosorben daun mangga yang telah diperoleh kemudian dikarakterisasi menggunakan FTIR dan SEM. Hasil karakterisasi material biosorben daun mangga termodifikasi CTAB (BDMC) menggunakan FTIR menunjukkan keberadaan gugus fungsi O-H, C-H, C=C dan C-O yang masing-masing pada bilangan gelombang 3425,5; 2923,4; 1632,1 dan 1062,9 cm^{-1} . Gugus azo (-N=N-) pada panjang gelombang 1730,4 cm^{-1} terdeteksi muncul setelah adsorpsi. Hasil karakterisasi SEM menunjukkan terdapat struktur yang seragam pada material biosorben daun mangga termodifikasi CTAB (BDMC). Uji adsorpsi daun mangga termodifikasi CTAB terhadap metil orange diperoleh pada kondisi optimum terjadi pada pH 2 dengan konsentrasi metil orange 30 ppm dan waktu kontak selama 80 menit sehingga diperoleh kapasitas adsorpsi sebesar 7,02 mg/g dan persen adsorpsi sebesar 93,67%. Kinetika adsorpsi mengikuti model orde dua semu.

Kata Kunci : Adsorpsi, Biosorben, Surfaktan CTAB, Methyl Orange

METHYL ORANGE (MO) ADSORPTION USING BIOSORBENT OF CTAB MODIFIED MANGO LEAF

ABSTRACT

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This study successfully conducted the adsorption of methyl orange (MO) using the biosorbent of CTAB modified mango leaf. The making of mango leaf biosorbent was done using the chemical activation by means of NaOH solution of 0,1 M and modified with the CTAB surfactant. Mango leaf biosorbent obtained then was characterized using FTIR and SEM. The results of the characteristics of the materials of the biosorbent of CTAB modified mango leaf (BDMC) by means of FTIR showed the existence of functional group of O-H, C-H, C=C and C-O, each of which was in the wavenumber of 3425,5; 2923,4; 1632,1 and 1062,9 cm^{-1} . The group of (-N=N-) on the wavenumber of 1730,4 cm^{-1} was detected to appear after the adsorption. The results of the SEM characteristics showed the equal structure in the material of the biosorbent of CTAB modified mango leaf (BDMC). The test of the adsorption of CTAB modified mango leaf towards the methyl orange showed an optimum condition occurred in pH 2 with the concentration of methyl orange of 30 ppm and the contact time for 80 minutes; thus, it obtained the adsorption of 7,02 mg/g and the percentage of adsorption of 93,67%. Meanwhile, the kinetics of the adsorption followed the Pseudo-second-order model

Keywords: Adsorption, Biosorbent, CTAB Surfactant, Methyl Orange