

ABSTRAK

STUDI TRANSPOR *MALACHITE GREEN* MENGGUNAKAN METODE *POLYMER INCLUSION MEMBRANE (PIM)* DENGAN *COPOLY-* *EUGENOL ETILEN GLIKOL DIMETAKRILAT (Co-EEGDMA) 2%* SEBAGAI SENYAWA PEMBAWA

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Penelitian mengenai studi transpor *malachite green* menggunakan metode *Polymer Inclusion Membrane (PIM)* dengan *Copoly-Eugenol Etilen Glikol Dimetakrilat (Co-EEGDMA) 2%* sebagai senyawa pembawa telah dilakukan. Penelitian ini bertujuan untuk mengetahui optimasi PIM dengan senyawa pembawa Co-EEGDMA 2% dengan mempelajari pengaruh pH *malachite green* pada fasa sumber, konsentrasi HNO_3 pada fasa penerima, ketebalan membran, konsentrasi senyawa pembawa, dan waktu transpor *malachite green*, serta mempelajari kompetisi transpor *malachite green* pada limbah buatan. Preparasi membran dilakukan dengan mencampurkan Co-EEGDMA 2%, polivinil klorida (PVC), dan dibenzil eter (DBE) ke dalam pelarut tetrahidrofuran (THF). Konsentrasi *malachite green* setelah transpor ditentukan dengan spektrofotometer UV-Vis dan absorbansinya diukur pada panjang gelombang 613 nm. Hasil penelitian menunjukkan bahwa membran PIM dengan senyawa pembawa Co-EEGDMA 2% mampu mentranspor *malachite green* secara efektif sebesar 91,53% pada kondisi optimum: pH fasa sumber 9, konsentrasi fasa penerima 0,50 M, ketebalan membran PIM T_{54} , komposisi senyawa Co-EEGDMA 2% 4×10^{-2} M dan waktu transpor 18 jam. Membran PIM sebelum dan setelah transpor dikarakterisasi menggunakan FT-IR dan SEM. Transpor *malachite green* dengan logam Pb(II) dan Cu(II) menghasilkan konsentrasi *malachite green* yang tetranspor lebih kecil dibandingkan transpor *malachite green* tanpa logam (kontrol). Keberadaan logam kompetitor mengakibatkan adanya gangguan terhadap proses transpor *malachite green* dari fasa sumber ke fasa penerima.

Kata kunci : Co-EEGDMA, *malachite green*, PIM.

ABSTRACT

STUDY TRANSPORT OF MALACHITE GREEN USING POLYMER INCLUSION MEMBRANE (PIM) METHOD WITH COPOLY-EUGENOL ETHYLENE GLYCOL DIMETHACRYLATE (Co-EEGDMA) 2% AS A CARRIER

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Research on malachite green transport using the Polymer Inclusion Membrane (PIM) method with Copoly-Eugenol Ethylene Glycol Dimethacrylate (Co-EEGDMA) 2% as a carrier compound has been carried out. This study aims to determine the optimization of PIM with 2% Co-EEGDMA carrier compound by studying the effect of malachite green pH on the source phase, HNO₃ concentration on the receiving phase, membrane thickness, carrier compound concentration, and malachite green transport time, as well as studying malachite green transport competition. on man-made waste. Membrane preparation was carried out by mixing 2% Co-EEGDMA, polyvinyl chloride (PVC), and dibenzyl ether (DBE) into tetrahydrofuran (THF) solvent. The concentration of malachite green after transport was determined with a UV-Vis spectrophotometer and the absorbance was measured at a wavelength of 613 nm. The results showed that the PIM membrane with Co-EEGDMA 2% carrier compound was able to effectively transport malachite green 91.53% under optimum conditions: source phase pH 9, receiving phase concentration 0.50 M, PIM membrane thickness T₅₄, carrier compound concentration 4x10⁻² M, and transport time 18 hours. PIM membranes before and after transport were characterized using FT-IR and SEM. Transport of malachite green with Pb(II) and Cu(II) metals resulted in a smaller concentration of malachite green than the transport of malachite green without metal (control). The presence of competitor metals results in disruption of the malachite green transport process from the source phase to the receiving phase.

Keywords : Co-EEGDMA, malachite green, PIM.