

ABSTRAK

STUDI TRANSPOR *MALACHITE GREEN* MENGUNAKAN METODE *POLYMER INCLUSION MEMBRANE (PIM)* DENGAN *POLY-BISPHENOL A DIGLYCIDYL ETHER (POLY-BADGE) 1:1* SEBAGAI SENYAWA PEMBAWA

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Penelitian mengenai studi transpor *malachite green* telah dilakukan menggunakan metode *Polymer Inclusion Membrane (PIM)* dengan *Poly-Bisphenol A Diglycidyl Ether (Poly-BADGE) 1:1* sebagai senyawa pembawa. Penelitian ini bertujuan untuk mengetahui optimasi PIM dengan senyawa pembawa *Poly-BADGE 1:1* 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. Membran dipreparasi dengan melarutkan senyawa pembawa *Poly-BADGE 1:1*, polivinil klorida dan dibenzil eter ke dalam pelarut tetrahidrofuran (THF). Konsentrasi *malachite green* setelah transpor ditentukan dengan metode spektrofotometri UV-Vis dan absorbansinya di ukur pada panjang gelombang $\lambda=613$ nm. Hasil penelitian menunjukkan bahwa membran PIM dengan senyawa pembawa *Poly-BADGE 1:1* mampu mentranspor *malachite green* secara efektif sebesar 93,28% pada kondisi optimum: pH fasa sumber 8, konsentrasi fasa penerima 1,00 M, ketebalan membran PIM T_{54} , konsentrasi senyawa pembawa 0,05 M, dan waktu transpor 24 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. Keberadaan logam kompetitor mengakibatkan adanya gangguan terhadap proses transpor *malachite green* dari fasa sumber ke fasa penerima.

Kata Kunci: *Malachite Green*, *Poly-BADGE 1:1*, *Polymer Inclusion Membrane (PIM)*

ABSTRACT

STUDY TRANSPORT OF MALACHITE GREEN USING THE POLYMER INCLUSION MEMBRANE (PIM) METHOD WITH POLY-BISPHENOL A DIGLYCIDYL ETHER (POLY-BADGE) 1:1 AS A CARRIER COMPOUND

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Research on malachite green transport study has been conducted using Polymer Inclusion Membrane (PIM) method with Poly-Bisphenol A Diglycidyl Ether (Poly-BADGE) 1:1 as carrier compound. This study aims to determine the optimization of PIM with Poly-BADGE 1:1 carrier compound by studying the effect of malachite green pH in the source phase, HNO₃ concentration in the receiving phase, membrane thickness, carrier compound concentration and malachite green transport time, and studying malachite green transport competition in artificial waste. The membrane was prepared by dissolving the carrier compound Poly-BADGE 1:1, polyvinyl chloride and dibenzyl ether into tetrahydrofuran (THF) solvent. The concentration of malachite green after transport was determined by UV-Vis spectrophotometric method and the absorbance was measured at a wavelength of $\lambda = 613$ nm. The results showed that PIM membrane with Poly-BADGE 1:1 carrier compound was able to effectively transport malachite green by 93.28% at the optimum conditions: source phase pH 8, receiving phase concentration 1.00 M, PIM membrane thickness T54, carrier compound concentration 0.05 M, and transport time 24 hours. PIM membranes before and after transport were characterized using FT-IR and SEM. The transport of malachite green with Pb(II) and Cu(II) metals resulted in a smaller concentration of malachite green transported compared to the transport of malachite green without metals. The presence of competing metals causes interference with the transport process of malachite green from the source phase to the receiving phase.

Keywords: Malachite Green, Poly-BADGE 1:1, Polymer Inclusion Membrane (PIM).