

ABSTRACT

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EFFECT OF ELECTRIC FIELD AND ELECTRIC CURRENT ON MALACHITE GREEN DECOLORIZATION ENZYMES

Thesis, Faculty of Science and Technology (2018).

(xiv + 54 pages, 3 tables, 6 graphs, 11 figures, 10 appendices)

Malachite green can cause negative effect for the environment and humans. Microorganisms are reported to be able to decolorize malachite green. One of the malachite green degradation agents is *Enterobacter* sp.. *Enterobacter* produces enzymes that decolorize malachite green. There are many factors that affect the enzymatic reaction, one of them is electric field. So far, experiment on the effect of electricity on enzymes often mention electricity, included electric field and electric current. In this experiment, the effect of electric field and electric current on enzyme's malachite green decolorization activity is evaluated. This experiment was conducted by giving electric field and electric current treatment in malachite green decolorization's process. Direct electric current (DC) and Alternating electric current (AC) are used to determine if there are different effect on malachite green decolorization's enzymes. Electric field 2,8 V/cm does not affect the activity of enzymes decolorization against malachite green. Meanwhile, the application of increased electrical current can disturb the enzyme activity to damage the enzyme. Direct current (DC) and Alternating current (AC) produce different results. AC doesn't cause electrolysis effect and decreasing the enzyme activity.

Keywords: Malachite green; Electric field; Enzyme; Decolorization; Electric Current.

References: 53 (1955 - 2018).

ABSTRAK

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PENGARUH MEDAN LISTRIK DAN ARUS LISTRIK TERHADAP ENZIM PENDEKOLORISASI *MALACHITE GREEN*

Tugas Akhir, Fakultas Sains dan Teknologi (2018).

(xi + 54, 3 tabel, 6 grafik, 11 gambar, 10 lampiran)

Malachite green dapat menimbulkan berbagai dampak buruk bagi lingkungan maupun bagi manusia. Mikroorganisme dilaporkan dapat melakukan dekolonisasi *malachite green*. Salah satu agen pendegradasi *malachite green* adalah *Enterobacter* sp.. *Enterobacter* menghasilkan enzim untuk melakukan dekolonisasi. Terdapat banyak faktor yang dapat mempengaruhi aktivitas enzim, salah satunya adalah medan listrik. Penelitian mengenai pengaruh listrik terhadap enzim tidak memisahkan antara medan listrik dan arus listrik. Dalam penelitian ini, dilakukan evaluasi pengaruh medan listrik dan arus listrik terhadap aktivitas enzim pendekolorisasi *malachite green*. Penelitian dilakukan dengan memberikan perlakuan medan listrik dan arus listrik pada enzim dalam proses dekolonisasi *malachite green*. Arus listrik *Direct Current* (DC) dan arus listrik *Alternating Current* (AC) digunakan untuk memastikan jika terdapat perbedaan efek yang dihasilkan terhadap aktivitas enzim pendekolorisasi *malachite green*. Medan listrik sebesar 2,8 V/cm tidak mempengaruhi aktivitas enzim pendekolorisasi *malachite green*. Sedangkan, penerapan arus listrik yang meningkat menyebabkan aktivitas enzim terganggu hingga merusak enzim. Arus listrik DC dan AC menghasilkan hasil yang berbeda. Arus listrik AC tidak menyebabkan efek elektrolisis dan menyebabkan penurunan aktivitas enzim pendekolorisasi *malachite green*.

Kata Kunci: *Malachite green*; Medan listrik; Enzim; Dekolorisasi; Arus Listrik.

Referensi: 53 (1955-2018)