

Effect of Different Concentration of Methylene Blue on Dye Decolourisation using Fungal Mycelium of *Aspergillus tamarii*

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Structured Abstract

Background: This research paper focuses on the effect of dye degrading ability of the fungus *Aspergillus tamarii* on the varying concentrations of methylene blue dye. Following the great increase in dye demand of the fast-growing industries, the current methods used in treating the dye effluent produced especially by the textile industry lacks the eco-friendliness property and less cost effective due to the usage of various expensive chemicals and excessive sludge formation throughout the process. However, over the last few years, the emergence of research on fungal mycelium as a main candidate for bioremediation had shown great promising outcomes toward the dye decolourisation process. Hence, the objectives of this study are to determine the effect of different methylene blue dye concentration on the percentage decolourisation of dye by the fungal mycelium of *Aspergillus tamarii*. In addition, it is also to determine the kinetic constants of methylene blue decolourisation by *Aspergillus tamarii* for different dye concentrations.

Methods: This was done by inoculating four (4) fungal mycelium discs of *Aspergillus tamarii* into the Erlenmeyer flask containing different concentrations of methylene blue dye. The result of the experiment was determined by running the sample in a UV/Vis spectrophotometer and data calculation using the first-rate order reaction basis.

Results: The result obtained from this research is that the fungus *Aspergillus tamarii* was able to degrade dye on all the three flasks regardless of its increasing concentrations. A natural log against time graph was plotted for each concentrations of methylene blue revealed that all three samples follow the first-order kinetic principle which states that the rate of reaction increases as the concentration of the methylene blue dye increases.

Conclusion: This study is conducted to better understand the effect of *Aspergillus tamarii* towards the dye degrading process alongside to give out more valuable outcome of this study for more future research to come.

Keywords: Biodegradation, methylene blue, *Aspergillus tamarii*

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