UNIVERSITI TEKNOLOGI MARA

STUDY OF PH AND SHAKING RATES ON FAST BIODEGRADATION OF TOXIC BPA BY *PSEUDOMONAS AERUGINOSA* NR.22 ISOLATED FROM MALAYSIA POND

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ABSTRACT

Biodegradation is the decomposition of materials by the bacteria, fungi, or other biological substances. Material that can be composed by the living creature is known as biodegradable material. This terms are widely used through the ecology, waste management, biomedicine, and bioremediation. Biodegradable matter serves as a carbon sources for microorganism and it is generally organic material. 100 ppm of Bisphenol A (BPA) will be the carbon source for the Pseudomonas aeruginosa (*P. aeruginosa*) and will be degraded. In this study pH and shaking will be tested. Firstly, the study on the pH effect will be conducted in order to obtain the optimum pH for the fast biodegradation of BPA. After that, by using the optimum pH, the study of shaking rate will be conducted. The shaking rate will be investigated to obtain optimum shaking. Laccase assay is done to relate to the biodegradation. Biodegradation process that use those parameters will be estimated by using the High Performance Liquid Chromatography (HPLC) and the percentage of the BPA degradation could be determined. The correlation between the optimum pH and shaking rate could be done at the end of the experiment. And it can be concluding that the most optimum pH is at 6.3 while the most optimum shaking rate is at 130 ppm. This finding will be discussed in this writing.

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CHAPTER 1

INTRODUCTION

1.1 ABSTRACT

Biodegradation is the decomposition of materials by the bacteria, fungi, or other biological substances. Material that can be composed by the living creature is known as biodegradable material. This terms are widely used through the ecology, waste management, biomedicine, and bioremediation. Biodegradable matter serves as a carbon sources for microorganism and it is generally organic material. In this case, Bisphenol A (BPA) will be the carbon source for the *Pseudomonas aeruginosa* (*P.aeruginosa*) and this BPA will be degraded by this microorganism.

In this study of pH and shaking rates on the fast biodegradation of BPA, *P.aeruginosa* will be tested with two parameters which is the pH and the shaking rates. First, the study on the pH will be conducted in order to obtain the optimum pH for the fast biodegradation of BPA. After that, by using the optimum pH, the study of shaking rate will be conducted. The shaking rate will be investigated until the optimum shaking rate obtained.

Biodegradation process that use those parameters will be estimated by using the Gas chromatography and the percentage of the BPA degradation could be determined. The correlation between the optimum pH and shaking rate could be done at the end of the experiment.