



LACTIC ACID PRODUCTION FROM CASSAVA MILL EFFLUENT (CME) USING *Rhizopusoryzae* IMMOBILIZED IN PVA-ALGINATE-SULFATE BEADS.

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ABSTRACT

Cassava Mill Effluent (CME) is an effluent, produced from peeling process of the skin, cutting and starch extraction from the tapioca tuber. The CME contains high concentration of starch. It is usually dispose directly into the nearest river and become a source of pollutant that contributes to the high value of its chemical oxygen demand (COD), biological oxygen demand (BOD), and total solids (TS). In this study, Cassava Mill Effluent has been used as fermentation medium for growth of *Rhizopusoryzae* to produce lactic acid. To improvise the yield, spore of *Rhizopusoryzae* was immobilized in PVA-Alginate-Sulfate beads and fermentation was carried out for 6 days. Screening of lactic acid production using the production medium with various conditions; temperature (30°C-40°C), agitation speed (120-200 rpm), pH (4-7) and beads percentages (at 0% (w/v), 5% (w/v), 10% (w/v)). Fermentation study was conducted for 6 days using conditions derived from 2-level Factorial Design. Analysis of variance (ANOVA) showed that there was a strong significant influence of the factors and their interaction on production of lactic acid ($P < 0.0001$) except for factor pH with ($P = 0.0670$). The regression model for lactic acid production fitted the data adequately and explains the variation of more than 99% in the response. The analysis of result showed that the maximum production of lactic acid can be achieved at initial fermentation medium pH of 7.0, temperature of 40°C; percentage of beads (w/v) of 10% and agitation speed of 200 rpm and the maximum lactic acid production is 8.54 g/L. This study exploits the potential of Cassava Mill Effluent (CME) for production of lactic acid. Its successful will certainly contribute to Malaysia's bioeconomy.

Keywords: Lactic acid, Cassava Mill Effluent, *Rhizopusoryzae*, ANOVA.