

**MATHEMATICAL MODELING OF TAMARIND SEEDS BY
USING SUPERCRITICAL CARBON DIOXIDE EXTRACTION**

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ABSTRACT

This research was carried out with two objectives which were to analyze the effect of temperature and pressure in supercritical carbon dioxide extraction of tamarind seeds results obtained from previous study and to determine the best mathematical model that can fit the solubility and oil yield data. This research had been carried out by using the data obtained from previous study by Sawai Anak Jantan for her final year project entitled Solubility Determination of Tamarind Seeds Extracts by Using Supercritical Carbon Dioxide Extraction. The experiment was carried out for about 45 minutes of extraction with various temperatures of 40, 60 and 80°C and at pressure 3000, 5000 and 7000 psi. From the data obtained, the solubility of the tamarind seeds oil were carried out by applied three mathematical models which are Del Valle and Aguilera's model, Chrastil's model and Kumar and Johnston's model. Results obtained from the research proved that, Kumar and Johnstons's model show a good agreement between experimental and calculated values of solubility than the Chrastil's model and Del Valle and Aguilera's model. While Van't Hoff type of expression was applied to determine the oil yield at any given temperature. Based on the result of the coefficient of determination, R^2 it is proved that the mathematical model is fit with the data of mass oil yield obtain from the experimental result.

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