

**DRYING KINETICS OF *PHALERIA MACROCARPA*  
LEAVES: EXPERIMENTAL INVESTIGATION AND  
MODELLING**

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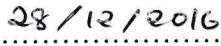
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## AUTHOR'S DECLARATION

I declare that the work in the thesis was carried out in accordance with the regulation of Universiti Teknologi MARA. It is original and is the results of my own, unless otherwise indicated or acknowledge as reference work.

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We declared that we read this thesis and in our point of view this thesis is qualified in terms of scope and quality for the purpose of awarding the Bachelor of Chemical Engineering (Environment) with Honours.

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## ABSTRACT

*Phaleria macrocarpa* plant is one of the alternative medicines to cure various human health problems. Drying is one of the well-known pre-treatment before the extraction process. In order to determine the efficiency of a drying process, the effective utilization of the temperature supplied is crucial. In this study, the effects of temperature on the drying of *Phaleria macrocarpa* samples were investigated. Drying experiment were conducted with temperatures of 50°C, 60°C, 70°C, 80°C and 90°C. The dehydration times for reaching the equilibrium moisture content were approximately 460, 461, 456, 443, 439 minutes for the drying temperature for of 50, 60, 70, 80, and 90°C respectively. The experimental data were using fitted to the polynomial mathematical equation represent by Page model and power mathematical equation represent by Lewis model. These models were evaluated by comparing the coefficient of determination ( $R^2$ ). The highest value of regression coefficient  $R^2$  which is 0.9987 at temperature of 60°C with  $k = 0.02137$  and  $n = 1.058$  show that Lewis model best fit the experimental data. The best model applied to validate the experimental data using ODE solver which is the Fourth order Runge-kutta method shows the highest value of regression coefficient of  $R^2 = 0.9989$  is at temperature 60°C in 461 of drying time.