Modelling of hydration kinetics of brown rice during soaking

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■ **ABSTRACT :** The hydration kinetics of BPT 5204 and NLR 92 rice varieties was studied by soaking in water at temperatures of 30, 40, 50, 60 and 70^0C in water bath up to 180 min. To optimize the soaking conditions and design food processing equipment, the hydration data are very useful. The amount of water absorbed was high at the early stage of hydration followed by a decreased rate. Peleg's equation adequately described the hydration characteristics of rice under the experimental condition ($R^2 = 0.95$). The Peleg's rate constant, k_1, and Peleg's capacity constant, k_2 decreased with an increase in temperature from 30 to 70^0C for both varieties of rice demonstrating that the water absorption rate increased and water absorption capacity decreased. Both the Peleg's constants were expressed by a polynomial function ($R^2=0.9$) for relating to the temperature. Leaching loss found to be linearly related to time and temperatures. The temperature dependence of $1/k_1$ followed an Arrhenius type relationship. The activation energy was 26.33 kJ/mol and 31.17 kJ/mol for BPT 5204 and NLR 92 rice, respectively.

■ **KEY WORDS :** Rice, Hydration, Peleg's equation, Modelling

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