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## Modelling the Total Cooking Process of Two Local Rice Varieties

H.P.A. Jayamini<sup>a</sup>, J.A.Weliwita<sup>b</sup>, M. Narayana<sup>c</sup>, S. Witharana<sup>a</sup> and N.K. Hettiarachchi<sup>a</sup>

<sup>a</sup>*Department of Mechanical & Manufacturing Engineering, Faculty of Engineering, University of Ruhuna, Sri Lanka*

<sup>b</sup>*Division of Engineering Technology, Higher Colleges of Technology, Fujairah, United Arab Emirates*

<sup>c</sup>*Department of Chemical & Process Engineering, Faculty of Engineering, University of Moratuwa, Sri Lanka*

Corresponding author: [nandita@mme.ruh.ac.lk](mailto:nandita@mme.ruh.ac.lk)

In a fast-changing world, rice (*Oryza sativa*) remains to be the staple food for billions of people. Rice cooking is an energy-intensive activity. Energy efficient cooking methods can therefore largely improve the household economy. Despite a few literatures has suggested pre-soaking as a means to reduce the cooking energy, understanding the precise cooking kinetics largely remains elusive. Nevertheless, this knowledge is paramount to design energy efficient cooking processes. In this study, pre-soaking and cooking behaviour of local rice varieties, Suwandal and White raw rice were examined. Seven samples of each variety were considered. Rice (20 g) was soaked in 50 ml of water. Soaking was conducted for 0.5, 1.0, 2.0, 3.0, 3.5, 4.0 and 8.0 hours durations. Moisture intake in each experiment was calculated, and hydration curves were constructed. Experimental results and Peleg's (1988) predictions were in good agreement. Cooking experiments were conducted using six samples from each rice variety with water to rice ratios of 1:1, 1.25:1, 1.5:1, 2:1, 2.5:1, and 3:1. Each sample weighed 250 g and was pre-soaked for 30 mins. Dimensions of the cooked grains measured using stage microscope, were used to calculate the volume of the grains after each experiment. This volume was considered as a representation of the degree of cooking. Degree of cooking thus obtained showed good agreement with the first order reaction equation proposed by Suzuki et al (1976). The present study confirms that Peleg's equation and Suzuki equation are capable of predicting the soaking and cooking behaviour of Suwandal and White raw rice.

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