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Modelling the Rehydration Characteristics of White Yam

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Abstract: *Presented in this paper is a proposed model describing the variation in the rehydration ratio with rehydration time for yam slices. The 'new' model describes the relationship between the moisture content of yam slices with time when rehydrated. The changes in mass and moisture content data with rehydration time, during the rehydration process, were recorded. Rehydration was carried out at 27 ^oC, 40 ^oC, 60 ^oC, and 80^oC for 3.0 mm thick dehydrated yam slices. Regression analysis established that the variation in rehydration ratio vs rehydration time data, better fitted a two-term exponential equation rather than a quadratic equation. Also, regression analysis done on variation in rehydration ratio vs rehydration time data of cube sweet potatoes found it literature, further validated that the rehydration ratio vs rehydration time data better fitted a two-term exponential equation rather than a quadratic equation. For the recorded moisture content versus rehydration time data, a better fit was obtained for the new model rather than the Weibull, Peleg, and Exponential models. This study is essential for a better understanding of the rehydration characteristics of yam slices during the rehydration process. Information about rehydration characteristics of the yam slices presented in this work will also be valuable to optimise and characterise the soaking conditions, design yam-processing equipment and predict water absorption as a function of time and temperature. The rehydration process clearly indicates that rehydration occurs very rapidly in the first few minutes of the rehydration process, and this process is faster as the rehydration temperature increases.*

Keywords: *Rehydration Ratio Models; Rehydration kinetic models; Yam; Weibull, Peleg, and Exponential models*