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Application of Peleg's equation to model the water absorption behaviour of green gram during soaking

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■ **ABSTRACT :** The water absorption of green gram was studied by soaking in water at room temperature (29^{0}C), 40 and 50^{0}C in water bath upto 60 min. Moisture content of green gram was increased from 11.01% d.b to 19.43, 23.7 and 30.27% d.b. as soaking temperature and time increased. The linear increase in moisture content was observed for each soaking temperature upto 60 min. The water absorption data was modeled by using Peleg's model. Peleg's equation adequately described the soaking behaviour of sample using short time data under the experimental condition ($R^2 \geq 0.82$). The Peleg's rate constant, k_1, decreased from 6.658 to 2.034 min%d.b^{-1} while Peleg's capacity constant, k_2 increased from 8 x10^{-3} to 2.08 x10^{-2} as temperature increased from 29 to 50^{0}C for green gram demonstrating hydration rate decreased and absorption capacity increased with temperature. Both the Peleg's constants were expressed by a linear function ($R^2 \geq 0.86$) for relating to with temperature. The modified Peleg's equation could be used for prediction of moisture content within experimental condition.

■ **KEY WORDS :** Green gram, Water absorption, Peleg's model

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