

# Modelling of Drying Kinetics of Indian Berry Leather

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**Abstract** Fruit leather is dehydrated fruit gel, relished as a snack food. For processing of the leather, drying is one of the prominent unit operations. Modelling of drying operation assists proper quality control of the product. Aim of the study is to develop a suitable model that can describe the drying process of Indian berry leather prepared without any added sugar. The drying was carried out in hot air oven at four temperatures i.e., 45, 50, 55, and 60°C. The process was studied using Lewis, Page, Handerson Pabis and Modified Page models. Coefficient of determination ( $R^2$ ) and root mean square error (RMSE) were used to express the best fit. Lewis model was found to be the best fitted model ( $R^2 > 0.96$  and  $RMSE < 0.05$ ) to express the drying behaviour within the domain of temperatures studied. The value of drying constants increased with increase in temperature and ranged from  $5.5 \times 10^{-3}$  to  $7.38 \times 10^{-3} \text{ s}^{-1}$ . Applying Arrhenius equation to Lewis model constant, the activation energy and pre-exponential factor were found to be 16.43 kJ/mol and  $1.077 \text{ s}^{-1}$ .

**Keywords:** Indian berry, fruit leather, Arrhenius model, drying model.