

## Modeling drying kinetics of fever leaves (*Ocimum viride*) in a convective hot air dryer

O P Sobukola, O U Dairo, O U Dairo

### Abstract

The drying behavior of fever leaves was investigated in a convective hot air dryer with forced convection at a fixed air velocity of 1.5m/s and drying air temperatures of 35, 45, 55 and 65°C. The constant rate period was absent and the drying curve took place in the falling rate period. Experimental data was fitted to six thin-layer drying models – Page, Modified page II, Henderson and Pabis, Modified Henderson and Pabis, Two term and Newton. The performances of the models were investigated by comparing the coefficient of determination ( $R^2$ ), reduced chi-square ( $\div 2$ ) and root mean square error (RMSE) between observed and predicted moisture ratios. The page model showed a good agreement with the data obtained while the effect of drying air temperature on the constants and coefficient of the page model was investigated. The effective diffusivity increases as temperature increases and range between  $5.551 \times 10^{-12}$  –  $3.379 \times 10^{-11} \text{m}^2/\text{s}$  while the activation energy was estimated to be 80.78kJ/mol.

**Keywords:** Fever leaves, convective hot air drying, modeling, diffusivity, activation energy