Title	Modeling sulfur dioxide uptake in dent corn during steeping
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Abstract

A mathematical model is employed to describe sulfur dioxide (SO_2) diffusion and reaction during steeping of dent corn. Experiments are performed to measure change of SO_2 content of grain during process. A computer-aided nonlinear optimization technique is used to estimate the effective diffusion coefficients and rate constants in the temperature range 25–55 °C. The effective diffusion coefficient for SO_2 varied between 2.27×10^{-11} and 6.24×10^{-11} m^2/s and had an Arrhenius activation energy of 24.3 kJ/mol. The reaction rate of SO_2 in dent corn followed first-order kinetics, with rate constants in the range of 0.80×10^{-6}–5.38×10^{-6} s^{-1} and activation energy of 49.16 kJ/mol.