Thesis Title	Process Parameters for Banana Powder Production Using Drum Dryer
Thesis Credits	12
Candidate	Miss Narudee Phongkitwithoon
Supervisors	Dr. Sailom Sampanvejsobha
	Asst. Prof. Dr. Tipaporn Yoovidhya
	Mr. Suwit Siriwattanayotin
Degree of study	Master of Engineering
Department	Food Engineering
Academic Year	1999

Abstract

The objective of this research was to study the effect of process parameters (banana maturity or peel color index (PCI), banana puree concentration, drum surface temperature and film thickness) on color and moisture content of the banana powder. Mathematical models were developed for predicting the effective moisture diffusivity coefficient and the browning kinetics of banana during drying.

The Gros Michel banana with maturity of PCI 5 and PCI 6 were used in this study. The banana puree with concentration of 80 and 90 percent were prepared by mixing KMS solution and 1 percent soy lecithin. The puree was then fed to drum dryer at specific process conditions, the process parameters in this study were drum surface temperature (120, 130 and 140°C) and drum clearances or film thickness (0.15 and 0.30 mm). It was found that the effective moisture diffusivity coefficient of banana varied from 1.38×10^{-9} to 4.11×10^{-9} m^2/s, their activation energy were 43.18

and 54.56 kJ/mol for banana with PCI 5 and PCI 6, respectively. The browning behavior of banana was found to follow the first order of kinetic reaction and their activation energy were 77.63 and 64.63 kJ/mol for banana with PCI 5 and PCI 6, respectively. The ANOVA results indicated that only banana maturity and drum surface temperature had significant effects on the effective moisture diffusivity coefficient and the browning rate constant.

Keywords : Banana Powder / Drum Dryer / Browning Kinetics / Effective Moisture Diffusivity Coefficient