Optimization of spray drying condition of Asparagus powder using response surface methodology

Ji Seon Park*, Soon Bae Kwon, Hye Jeong Kwon
Gangwondo Agricultural Research and Extension Services(GARES), Chunchon 24203, Korea

The purpose of this study was to determine the optimum spray drying conditions of water-soluble powder using response surface methodology that is a statistical procedure used for optimization studies. Independent variables included the additive contents of maltodextrin(X_1), inlet temperature(X_2), and air flow rate(X_3). The dependent variables were yield, water absorption index(WAI) and total phenolic compounds. Statistical analysis revealed that independent variables significantly affected all the responses. A maximum yield was obtained at 15.55% of X_1, 167.87 ℃ of X_2 and 50.00 mL/min of X_3. The water absorption index of asparagus increased with increasing MD ratio (X1), higher inlet temperature (X2) and higher air flow rate (X3).The total polyphenol contents of asparagus were higher when the MD addition ratio (X1) was 16.5657%, the inlet temperature (X2) was higher and the air flow rate (X3) was higher.