Skin-Whitening and Anti-Wrinkle Effects of Bioactive Compounds Isolated from Peanut Shell using Ultrasound-Assisted Extraction

감다혜, 홍지우, 김준희, 김진우[†]

선문대학교

(biochem.jk@gmail.com[†])

Response surface methodology was employed to optimize the ultrasound-assisted extraction (UAE) conditions for simultaneous optimization of dependent variables, including DPPH radical scavenging activity (RSA), tyrosinase activity inhibition (TAI), and collagenase activity inhibition (CAI) of peanut shell extracts. The effects of the main variables including extraction time (5.0~55.0 min, X1), extraction temperature (26.0~94.0 °C, X2), and ethanol concentration (0.0% ~99.5%,X3) were optimized. Based on experimental values from each condition, quadratic regression models were derived for the prediction of optimum conditions. The coefficient of determination (R2) of the independent variable was in the range of 0.89 ~ 0.96, which demonstrates that the regression model is suitable for the prediction. In predicting optimal UAE conditions based on the superimposing method, extraction time of 31.2 min, extraction temperature of 36.6 °C, and ethanol concentration of 93.2% were identified. Under these conditions, RSA of 74.9%, TAI of 50.6%, and CAI of 86.8% were predicted, showing good agreement with the experimental values.