

Optimization of extraction time and temperature on antioxidant activity of *Schizophyllum commune* aqueous extract using response surface methodology

Abstract

Central composite design of response surface methodology (RSM) was employed to optimize the extraction time (X1: 99.5-290.5 min) and temperature (X2: 30.1-54.9 °C) of *Schizophyllum commune* aqueous extract with high antioxidant activities and total phenolic content (TPC). Results indicated that the data were adequately fitted into four second-order polynomial models. The extraction time and temperature were found to have significant linear, quadratic and interaction effects on antioxidant activities and TPC. The optimal extraction time and temperature were: 290.5 min and 35.7 °C (DPPH• scavenging ability); 180.7 min and 41.7 °C (ABTS•+ inhibition ability); 185.2 min and 42.4 °C (ferric reducing antioxidant power, FRAP); 290.5 min and 40.3 °C (TPC). These optimum conditions yielded 85.10%; 94.31%; 0.74 mM Fe²⁺ equivalent/100 g; 635.76 mg gallic acid equivalent/100 g, respectively. The yields of antioxidant activities and TPC obtained experimentally were close to its predicted values. The establishment of such model provides a good experimental basis employing RSM for optimizing the extraction time and temperature on antioxidants from *S. commune* aqueous extract.