Response surface optimization for hot air-frying technique and its effects on the quality of sweet potato snack

ABSTRACT

Response surface methodology was employed to obtain the optimum process conditions for frying sweet potato (Ipomoea batatas) via hot-air frying technique. Sweet potato samples were fried at different frying temperature (140–160°C) and time (4–12 min). These variables were used as independent variables whose effects on fat and moisture contents; hardness and color were evaluated. The experimental results were fitted with a second-order polynomial equation by a multiple regression analysis. From the response surface methodology analysis, the recommended frying condition from the study was found to be 150°C for 12 min. Optimized sweet potato samples were compared with deep fat-fried samples; where the former had very low fat content i.e. decreased by 90.1%, lighter color and harder texture. Panellist selected the optimized air-fried samples for several sensory attributes which relates to quality. Frying sweet potatoes via hot air-frying technique can be considered as a healthier alternative to prepare fried food for consumption.