

Abstract

Mango seed kernel extract (MSKE) is a good source of phenolic antioxidants but it is unstable to environmental conditions. Encapsulation technology offers the opportunity to solve it. Therefore, the objective of this study was to develop a system for encapsulating MSKE in W/O/W emulsions and producing encapsulated MSKE powder by spray drying. Initially, the influence of polyglycerol polyricinoleate (PGPR) and biopolymers (gelatin and sodium alginate) concentration in W/O/W emulsions containing MSKE was studied. The results showed that PGPR affected the stability of the emulsions and encapsulation efficiency (EE). The presence of biopolymers in the inner aqueous phase of W/O/W emulsions increased EE. This may be due to the increase in the viscosity of biopolymers solution in the inner aqueous phases or the interaction between biopolymers and MSKE. Higher EE (more than 90 %) could be obtained when W/O emulsions stabilized by 1-5 % gelatin in inner aqueous phases were incorporated with 4-8 % PGPR, while sodium alginate required by 0.5-1.5 % sodium alginate in inner aqueous phases were incorporated with 8 % PGPR. Then, the emulsions which contained 1 % gelatin in the inner aqueous phase and 4 % PGPR was selected to study the effect of maltodextrin (MD) concentration (10-30 %) in outer aqueous phases on physicochemical properties of encapsulated MSKE powder. The results showed that increasing MD increased water solubility, L^* values and surface bioactive compound but decreased water activity, a^* , b^* , chroma, hue angle, total bioactive compound and EE.

Keywords: Mango Seed Kernel Extract, Water in Oil in Water Emulsion, Encapsulation