

Abstract

This article reports on the feasibility study of a cosmetic cream added with aqueous extract and oil from date (*Phoenix dactylifera* L.) fruit seed using experimental design. First, the mixture design was applied to optimize the cosmetic formula. The responses (dependent variables) were the spreadability (Y_{Sp}) and viscosity (Y_{Vis}), the factors (independent variables) being the weight proportions of the fatty phase (X₁), the aqueous date seed extract (X₂), and the beeswax (X₃). Second, the cosmetic stability study was conducted by applying a full factorial design. Here, three responses were considered [spreadability (Sp), viscosity (Vis), and peroxide index (PI)], the independent variables being the concentration of the date seed oil (DSO) (x₁), storage temperature (x₂), and storage time (x₃). Results showed that in the case of mixture design, the second-order polynomial equations correctly described experimental data. Globally, results show that there is a relatively wide composition range to ensure a suitable cosmetic cream from the point of view of Sp and Vis. Regarding the cosmetic stability, the storage time was found to be the most influential factor on both Vis and PI, which are considered here as indicators of physical and chemical stability of the emulsion, respectively. Finally, the elaborated and commercial cosmetics were compared in terms of pH, Sp, and centrifugation test (Ct).