

Abstract

A feasibility study of natural fruit jelly from three Algerian raw materials, namely date (*Phoenix dactylifera* L.) fruit syrup and suspension of orange albedo powder (OAP) in lemon juice (LJ) was performed by response surface methodology (RSM) based on central composite design (CCD). The textural properties of the final jelly were investigated through two dependent variables: hardness and stickiness. The cooking temperature (X_1), corresponding to that of thermo stated oil bath, and cooking time (X_2), taken for heating the initial fruit mixture in the oil bath (from ambient temperature without fixing however, the final temperature), were found to be the most influent factors, compared to °Brix of date syrup (X_3) and temperature (X_4) of the cooling stage following the cooking process. Results have also shown that the second-degree polynomial models correctly fit experimental data (R^2 , adjusted R^2 (R^2 adj) and cross-validation (Q^2) ≈ 1). Considering textural properties of commercial jellies as a reference, it was found that the cooking temperature of 155 °C for 10 min gave a jelly with suitable textural properties. On the other hand, FT-IR spectra revealed that the structure of such jelly was partially close to that of pectin molecules. Finally, the color analysis in the CIELab system of the fruit mixture over the cooking process showed that both lightness (L^*) and a^*/b^* ratio were not affected by the experienced temperature range (80–155 °C)