

OPTIMIZATION OF OSMO-CONVECTIVE DRYING OF ORANGE SLICES BY RESPONSE SURFACE METHODOLOGY

M. Azizi Khesal^{1*}, A. Bassiri², Y. Maghsoudlu³

- ¹⁾ Dept of Food Science and Technology, Science & Research Branch Islamic Azad University, Amol, Iran
- ²⁾ Dept of chemical industries, Iranian research organization of science & Technology (IROST), Iran
- ³⁾ Dept of Food Science and Technology, Science & Research Branch, Gorgan University, Gorgan, Iran

Osmotic dehydration is a viable process for the partial removal of water from plant tissues such as fruits and vegetables. The main advantage of this process is its influence on the principal drying method, shortening of the drying process, resulting in lower energy requirement. This process is preferred over others due to their vitamin and minerals, color, flavor and taste retention property. Osmotic dehydration of orange slices was optimized with respect to temperature of osmotic solution (30-50°C), time (120-300 min), sucrose concentration (40-60°Brix), drying temperature (40-70°C) and applying vacuum pulse of (100-300 mbar) for 15 min at the process beginning through response surface methodology. The process of osmotic dehydration followed by air-drying was studied. Applying surfaces profiler and contour plots optimum operation conditions were found to be temperature of osmotic solution 35°C, immersion time of 180 min, sucrose concentration of 60%, pressure of 240 mbar and drying temperature of 41.5°C. At these optimum conditions, water loss to solid gain ratio, rehydration ratio, colour and texture were found to be 17; 1.42; 13.94 and 3.08 respectively.

Keywords: Osmotic dehydration, vacuum pulse, RSM, orange slices, optimization

* Corresponding author: mshox64@yahoo.com