

EFFECTS OF DRYING TEMPERATURES ON CAROTENOID CONTENTS AND PHYSICO-CHEMISTRY PROPERTIES OF ORANGE SWEETPOTATO FLOUR

Nhan Minh Tri, Huynh Thi Hong Nhung
Summary

Orange sweetpotato roots have the flesh with natural orange color and high carotenoid content which is good for health. Sweetpotato flour can be produced by utilization of broken and small roots. The sweetpotato flour has benefits of long time storage and easy transportation. This study was conducted to develop a new food product and improve value from of the orange sweetpotato roots. The aims of this study were to use kinetic models at different drying temperatures (60, 70 and 80°C) to estimate contents of moisture and carotenoid in orange sweetpotato slices for processing good quality flour (high nutrient, suitable physiochemical properties and beautiful colour). The results showed that if orange sweet potato slices were dried at 70°C, sweet potato flour would have the bright yellow colour (L a b), high carotenoid content and good physicochemical properties (swelling power, viscosity, gel consistency and gel hardness). During drying sweetpotato slices, the moisture content could be described well by using the Newton model and the carotenoid content could be predicted by using the fractional conversion kinetic model. The activation energy of carotenoid degradation kinetic during drying could be calculated using the Arrhenius model. The statistical results also showed that there were many strong ($p < 0.001$) correlation coefficients between the physiochemical properties (swelling power, viscosity, gel consistency and gel hardness) and processing factors of the orange sweet potato flour.

Key words: Carotenoid, drying, kinetic, orange sweet potato, physicochemical properties.