

Abstract

Toddy palm is one of Thailand OTOP fruit of Phetchaburi and Songkla province. It is a seasonal fruit which has a unique flavor and texture, but has short shelf-life which can keep only 7 days in refrigerator or 1 month in freezer. Variety of toddy palm product in a current market is as well still limited in numbers. The aim of this project was therefore to added value by infusing with mango syrup, and study the feasibility of freeze drying method to prolong the shelf-life of toddy palm. Three different methods of osmotic dehydration (slow, fast and vacuum infusion) was used to infuse mango syrup to toddy palm prior to freeze drying. The effect of the primary and secondary drying during freeze dry process on the toddy palm properties including %moisture loss, %yield, rehydration coefficient, total soluble solid (TSS), reducing sugar %total acidity, pH, color and texture was then investigated and compared between non-infused and mango-infused toddy palm. From preliminary results, it was found that vacuum infusion method at 50°Brix for 10 min showed higher potential to further freeze drying than fast and slow infusion method. On freeze drying process, the effect of primary drying was studied on two factors using factorial design; temperature (-5°C and -10°C) and time (10 h and 18 h). The study of secondary drying was done on time of drying (8 h and 12 h). As results, mango-infused method gave higher yield percentage but lower rehydration coefficient, higher moisture content and higher hardness texture of freeze-dried product than that of non-infused method. When freeze dry, the primary drying at -5°C, 18 hour provided highest potential to evaporate water which showed highest %moisture loss. At this condition, freeze-dried product showed highest L* value with hardness, fracturability texture close to a commercial freeze-dried jackfruit. When rehydrated, non-infused freeze-dried toddy palm showed higher rehydration coefficient than mango-infused product. Percentage of rehydration coefficient was also comparable to the commercial freeze-dried product. Furthermore, the increasing time of secondary drying from 8 h to 12 h has no effect on all properties studied in this research. An 8- hour secondary drying would be sufficient to dry the product which showed significantly low final moisture content of freeze-dried toddy palm where longer time improve no further evaporation of water in the product.