Effect of packaging materials and storage temperature on the retention of physicochemical properties of vacuum packed pink guava powder

ABSTRACT

Storage shelf life of fruit powder is an important concern in fruit powder industry. The objective of this study was to explore the effect of storage conditions on the retention of physicochemical properties of guava powder. The spray-dried guava powder was packed by LDPE, PET laminated and OPP laminated film and stored at 5 °C and 25 °C for 10 weeks. The shelf life prediction was measured from the linear regression kinetic equation of water activity. Packaging film, storage temperature and time had significant effect on powder properties. PET laminated film showed the most significant effect in retention of moisture, water activity and lycopene. LDPE packed powder was the least effective in moisture control, which led to increase of glass transition temperature (Tg) and degree of caking (CD) and loss of color and lycopene. Higher storage temperature (25 °C) considerably increased the moisture gain, water activity, Tg and CD. The suitable storage condition for guava powder was PET laminated film at 5 °C that showed the maximum predicted shelf life (34.95 weeks) with the highest lycopene retention (74.56%) and low moisture content of < 3%.

Keyword: Pink guava powder; Packaging materials; Vacuum packing; Physicochemical properties; Shelf life