Abstract

This research was aimed to study the effect of modified starch onto the quality of tapioca pearl under low temperature storage in sucrose syrup. Three different types of modified tapioca starch which are hydroxypropyl starch, distarch phosphate and hydroxypropyl distarch phosphate. The physicochemical properties of native starch and modified starch have been investigated including pasting properties (RVA), color, pH, moisture content. As results, modified starch showed similar peak viscosity to native tapioca starch except hydroxypropyl distarch phosphate which showed highest viscosity (4632.67±42.72 cP). Native starch showed high breakdown value where distarch phosphate gave lowest breakdown. In particularly, distarch phosphate starch showed lowest breakdown but high in setback where hydroxypropyl starch showed relatively high breakdown but very low setback value. The mixture design was used to study different ratio of native starch: hydroxypropyl starch: Distarch phosphate to produced tapioca pearls. Six formulations were done including 5:55:40, 5:60:35, 20:50:30, 20:60:20, 30:30:40 and 30:50:20. The tapioca pearls before and after chilling storage for 4 days in sucrose syrup was measured as moisture content, micrograph, texture profile analysis and diameter. As a result, moisture content of all formulation except formulation at 20:50:30 were significant different ($p<0.05$) between before and after storage. Native starch gave undesignable characteristic and make tapioca pearl have high water absorption. Hydroxypropyl starch has properties to reduce retrogredation on tapioca pearl but give more swelling in pearls. On the other hand, Distarch phosphate modified starch has properties to reduce swelling in tapioca pearl after storage in chilling temperature. So, Modified starch help to reduce water absorption after storage and after chilling sucrose syrup effect to starch granule to rearrange and form clearly structure.