Mango (*Mangifera indica L.*) is one of the most important agricultural products in oriental regions. Because mango contains a large amount of low-molecular-weight carbohydrates, glass transition occurs readily with water sorption, followed by physical deterioration such as caking of powder. It is known that maltodextrin (MD) is useful for the physical modifier of dried fruits. The purpose of this study was to understand systematically the effect of MD addition on water sorption, glass transition, and the caking properties of freeze-dried mango pulp and solute.