Intermediate moisture foods (IMF) often contain high proportion of proteins and reducing sugars, which may lead to the Maillard reaction and result in changes of color, texture, flavor and nutritional value of the products. Corn syrup and high fructose corn syrup are often used in IMF to serve as sweeteners, humectants, and plasticizer to provide the appropriate taste and texture. In this study, we established model systems to evaluate the effect of glucose and fructose, the two major components of corn syrup and high fructose corn syrup, on the glycation of beta-lactoglobulin (LG) in IMF. The model systems consisted of LG, glucose/fructose/sorbitol, glycerol and water, and all systems were stored at 25 and 35 °C for two months. The progress of Maillard reaction was investigated by the browning assay. Meanwhile, LC-MS and LC-MS/MS were used to monitor the extent of glycation and the glycated sites on LG. The results of MS indicated that glucose had a higher reaction activity than fructose, but both had similar preference on the glycation site for LG. As for the potential glycation sites, L1, K77 and K100 showed high reaction activities, followed by K47, K75 and K91.