Title Changes in fructooligosaccaride composition and related enzyme activities of burdock root during low-temperature storage

Author Yoshihiro Imahori, Naoki Kitamura, Shizuka Kobayashi, Takanobu Takihara, Kimiko Ose and Yoshinori Ueda

Citation Postharvest Biology and Technology, Volume 55, Issue 1, January 2010, Pages 15-20

Keywords Burdock root; Fructan 1-exohydrolase; Fructan:fructan 1-fructosyl transferase; Fructooligosaccarides; Sucrose:sucrose 1-fructosyl transferase

Abstract

Changes in the composition of fructooligosaccarides (FOSs) and related enzyme activities of burdock root during low-temperature storage (1 °C) were measured. Burdock root is composed of monosaccharides, such as glucose and fructose, disaccharides, such as sucrose, and FOS in the extracted carbohydrates. The composition was the highest in fructose, followed by sucrose, FOS, and glucose. The FOS composition was the highest in 1-kestose, followed by nystose and 1-fructofuranosyl nystose. The fructose and glucose contents in burdock root during storage at 1 °C decreased significantly, whereas the sucrose content increased sharply. In contrast, the 1-kestose, nystose, and 1-fructofuranosyl nystose contents significantly increased. The activities of sucrose:sucrose 1-fructosyl transferase (1-SST) and fructan:fructan 1-fructosyl transferase (1-FFT) increased sharply and then gradually decreased, and they were closely related to the changes in FOS content. However, the activity of fructan 1-exohydrolase (1-FEH) was constant. These results indicate that changes in the FOS composition and related enzyme activities of burdock root might be related to low temperature during long term storage.