ONLINE ISSN : 1880-7291
PRINT ISSN : 1344-7882

Journal of Applied Glycoscience
Vol. 53 (2006) , No. 3 pp.215-222

An Improved Method for the Quantitative Analysis of Commercial Isomaltooligosaccharide Products Using the Calibration Curve of Standard Reagents

Taisuke Nakanishi[1)], Satoru Nomura[1)] and Yasuhito Takeda[2)]

1) Research and Development Center, Kashima Laboratory, Showa Sangyo Co., Ltd.
2) Kagoshima University

(Received October 19, 2005)
(Accepted February 23, 2006)

An improved method for the quantitative analysis of isomaltooligosaccharide (IMO) products by HPLC with a polymer-based amino column was developed. The column was much higher in durability than a silica-based amino column used for the conventional method. The column durability enabled us to determine each IMO using the calibration curve of RI-detector response against a concentration of standard IMO and maltosaccharide reagents. The linear relationship between peak height of RI response and concentration of saccharide was found for glucose, maltose, kojibiose, nigerose, isomaltose, maltotriose, panose, isomatotriose, maltotetraose and isomaltotetraose. The linearity was obtained at concentrations of up to 17 mg/mL, and correlation coefficients were ≥0.999. The slope of peak height *versus* concentration differed from saccharides, of which glucose was the highest while isomaltotetraose was the lowest. The relative slope of each saccharide to glucose, (slope for saccharide)/(slope for glucose), referred as a conversion factor, was calculated, and the concentration of each saccharide in commercial IMO products was determined from peak height on a HPLC chromatogram by the following equation: (concentration of saccharide A, mg/mL)=(concentration of standard glucose, mg/mL)× (peak height of A)/(conversion factor of A)/(peak height of standard glucose). A commercial IMO product was analyzed and the result obtained was as follows: isomaltose (19.2 g), isomaltotriose (10.3 g), panose (4.9 g), nigerose (2.0 g), kojibiose (3.5 g) and isomaltotetraose (2.8 g), respectively. The total amount of the sugars identified by the improved method from IMO was higher than those determined by the conventional method, which may have resulted from the higher resolution of each saccharide. The method showed

clearly the presence of nigerose and kojibiose together with four unknown components. A major unknown component was identified to be isomaltotriosylglucose by ^{1}H- and ^{13}C-NMR analyses.

Key words: isomaltooligosaccharide, isomaltooligosaccharide product, quantitative analysis, isomaltotriosylglucose

To cite this article:

Taisuke Nakanishi, Satoru Nomura and Yasuhito Takeda: An Improved Method for the Quantitative Analysis of Commercial Isomaltooligosaccharide Products Using the Calibration Curve of Standard Reagents . *J. Appl. Glycosci.*, **53**, 215-222 (2006) .

JOI JST.JSTAGE/jag/53.215