

Journal of Applied Glycoscience
The Japanese Society of Applied Glycoscience

[Available Issues](#) | [Japanese](#) >> [Publisher Site](#)

Author: Keyword: [ADVANCED](#)



[TOP](#) > [Available Issues](#) > [Table of Contents](#) > [Abstract](#)

ONLINE ISSN : 1880-7291

PRINT ISSN : 1344-7882

Journal of Applied Glycoscience

Vol. 51 (2004) , No. 3 pp.197-202



[\[PDF \(334K\)\]](#) [\[References\]](#)

Enzymatic Syntheses of Cycloalkyl β -D-Glucopyranosides and Their Inhibition Activity for Plant β -Glucosidase

Masayasu Takada¹⁾ and Koichi Ogawa¹⁾

1) Nihon Shokuhin Kako Co., Ltd.

(Received December 8, 2003)

(Accepted February 22, 2004)

Cycloalkyl β -D-glucopyranosides were synthesized by transglucosylation of a β -glucosidase from fungi. When cyclopropanemethanol (CPAM), cyclopentanol (CPE) and cyclopentanemethanol (CPEM) were used as the acceptors, the enzyme stereoselectively synthesized cyclopropylmethyl, cyclopentyl and cyclopentylmethyl β -D-glucopyranosides (abbreviated to CPAM- β -G, CPE- β -G and CPEM- β -G, respectively) from cellobiose as a glucosyl donor. Among the above three β -glucopyranosides, only CPEM- β -G was found to inhibit sweet almond enzyme activity ($K_i=0.15\pm 0.02$ mM). Other cycloalkyl β -D-glucopyranosides had little/or no inhibitory activity toward the β -glucosidases examined. CPEM itself had a weak inhibitory activity for sweet almond enzyme, with an uncompetitive type. However, the introduction of a glucose molecule to CPEM as a glycon converted its inhibition type into a competitive one. The K_i value of CPEM- β -G for the enzyme was reduced to about 1/7 compared with the corresponding cyclic alcohol. As it is expected that CPEM- β -G is much more likely to inhibit the activity of an enzyme from plant origin compared with those from fungi, we studied the possibility of CPEM- β -G inhibiting the activities of β -glucosidases extracted from the cut flowers on the basis of their kinetic data.

Key words: cycloalkyl β -D-glucopyranosides, β -glucosidase inhibitor, transglucosylation, cut flowers, cyclopentylmethyl β -D-glucopyranoside



[\[PDF \(334K\)\]](#) [\[References\]](#)

Download Meta of Article [\[Help\]](#)

[RIS](#)

[BibTeX](#)

To cite this article:

Masayasu Takada and Koichi Ogawa: Enzymatic Syntheses of Cycloalkyl β -D-Glucopyranosides and Their Inhibition Activity for Plant β -Glucosidase . *J. Appl. Glycosci.*, **51**, 197-202 (2004) .

JOI JST.JSTAGE/jag/51.197

Copyright (c) 2008 by The Japanese Society of Applied Glycoscience



[Japan Science and Technology Information Aggregator, Electronic](#)

