Glycosynthase

(Endo-M-N175Q)

An enzyme that adds whole sugar chains without breaking down products.

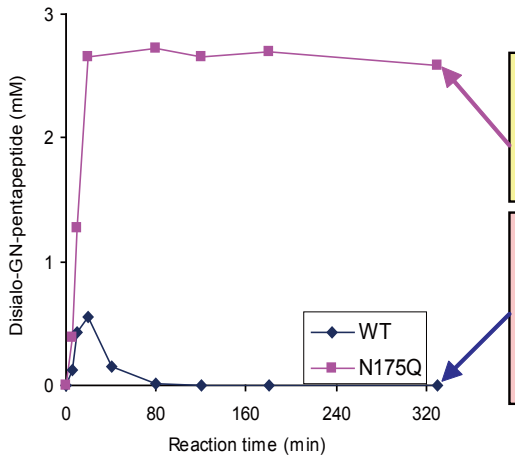
Increases efficiency of the sugar metastasis reaction

Applicable to Biosimilars

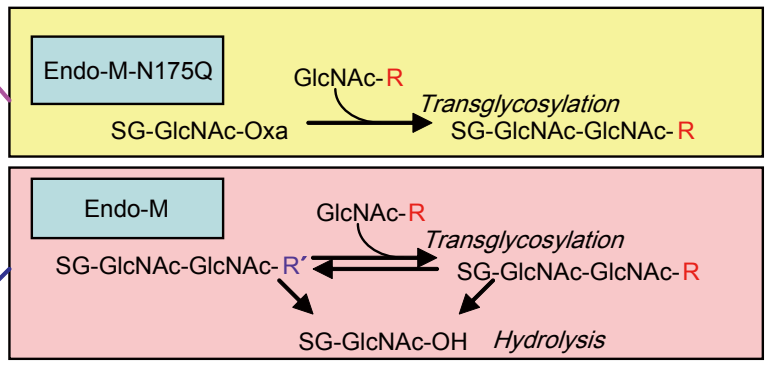
Making of a new functional sugar complex

Glycosynthase (Endo-M-N175Q) is an enzyme developed by Yamamoto, Umekawa, *et al*. through site-directed mutation of areas around the active center of Endo-M[1] which is already marketed. Since the feature of Glycosynthase is efficient transglycosylation activity by using oxazoline derivatives as glycosyl donors while suppressing sugar hydrolysis activity, the resulting glycosylated products are obtained in high yield with less digestion of the products by the enzyme. Due to this feature Glycosynthase is expected to be applied as a useful tool in glycotechnology.

Fig. 1 Comparison experiment [2]

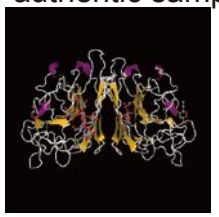


Specialized in transfer activity, and inhibited hydrolysis activity



Sugar chains of clear structure

Glycoprotein authentic sample



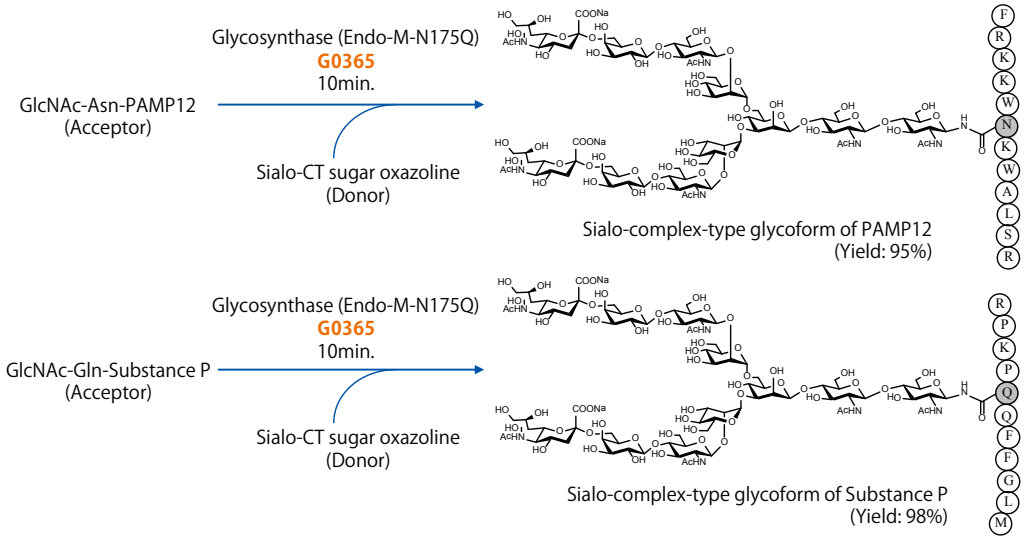
Sugar metastasis Glycosynthase (Endo-M-N175Q)

The acquisition of standardized sugar complexes

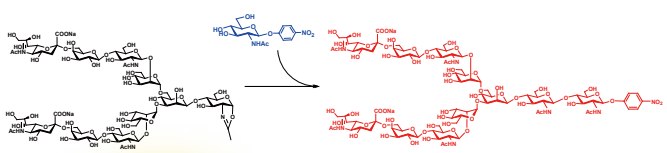
Biomedicines Biosimilars

Umekawa and her colleagues caused transglycosylation reactions at the GlcNAc site of sperm antigen CD52 using oxazoline derivatives of the high-mannose type sugar chains or the complex type sugar chains as glycosyl donors[2]. They succeeded in obtaining glycosylated products in high yield of 84% and 76%, respectively. Moreover, they also achieved transglycosylation reactions using two biologically active blood-pressure-lowing peptides, PAMP12 and Substance P, as glycosyl acceptors and an oxazoline derivative of a complex type sugar chain containing sialic acids as a glycosyl donor in 95% and 98% yield, respectively[3].

Fig. 2 Experiment example of the transglycosylation

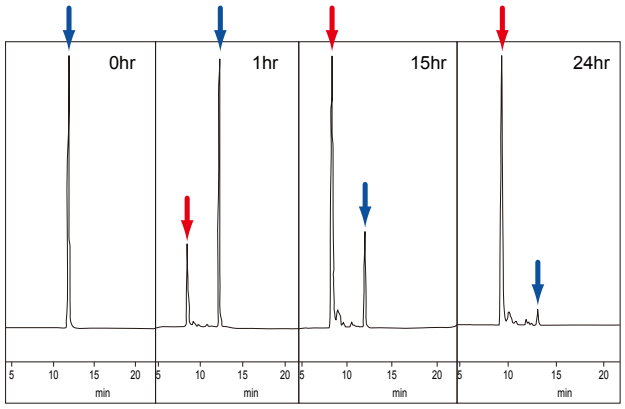


HPLC monitoring of the sugar metastasis reaction



Rate of metastasis 95%

HPLC : ODS
CH_3CN / H_2O
UV260nm



Realizing efficient transglycosylation reactions would also be useful for expansion into glycoprotein synthesis,such as the area of biosimilars.
Creation of new functional sugar complexes can be expected also.

G0365	**Glycosynthase (Endo-M-N175Q)** from *Mucor hiemalis* expressed in *Escherichia coli* (100m units/vial)	1vial
A1651	**Endo-β-*N*-Acetylglucosaminidase (Endo-M)** from *Mucor hiemalis* expressed in *Candida boidinii*	1vial
S0523	**Sialylglycopeptide (SGP)**	10mg
D4065	**Disialyloctasaccharide**	Please contact us.

1) K. Yamamoto, S. Kadowaki, J. Watanabe, H. Kumagai, *Biochem. Biophys. Res. Commun.* **1994**, *203*, 244.
2) M. Umekawa, T. Higashiyama, T. Tanaka, M. Noguchi, A. Kobayashi, S. Shoda, W. Huang, L-X. Wang, H. Ashida, K. Yamamoto, *Biochim. Biophys. Acta, Gen. Subj.* **2010**, *1800*, 1203.
3) M. Umekawa, C. Li, T. Higashiyama, W. Huang, H. Ashida, K. Yamamoto, L-X. Wang, *J. Biol. Chem.* **2010**, *285*, 511.

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