Glycosylation of Quercetin with Glucanotransferase from *Thermotoga maritina*

Lee Yoon Jung, Kim Bong Gyu, Park Mi Ran and Ahn Joong-Hoon
Bio/Molecular Informatics Center, Department of Molecular Biotechnology,
KonKuk University, Seoul
TEL : +82-2-450-3764, FAX +82-2-446-9001

Abstract

Flavonoids have recently attracted a lot of attention due to their proposed preventative role coronary disease as a result of dietary intake. Many natural flavonoid compounds are been modified to improve their usefulness. Because modified flavonoids benefit plant and human. Modification of flvonoids include methylation, glycosylation and hydroxylation. Glycosylation is one of modification reaction that appeared not only in nature but also in industry. Biological glycosylation has been an attractive topic since it provides the regiospecificity. Glucanotransferase transfers glucosyl residues to the acceptor molecules to produce glycosyl-transfer products. We used 4-α-glucanotransferase (4-α-GT) from hyperthermophilic microorganism, *Thermotoga maritina* to modify flavonoids. 4-α-GT was cloned into *E. coli* expression vector pRSET as His-tag fusion protein and purified with His-tag affinity column. The recombinant 4-α-GT was used to modify the flavonoids such as naringenin, apingenin, kaempferol, luteolin, quercetin, genistein, and daidzein and maltotriose was used as glucose donor.

Purified 4-α-GT is reactioned by naringenin, apigenin, kaempfrol, luteolin, quercetin, genistein, and daizein and maltoriose was used as glucose doner. The reaction products were analyzed by high performance liquid chromatograph. Quercetin and kaempferol that contain 3-OH group gave products that are likely quercetin 3-*O*-diglucoside and kaempferol 3-*O*-diglucoside.

Reference

1. Li, D., Park, S.-H., Shim, J.-H., Lee, H.-S., Tang, S.-Y., Park, C.-S., and Park, K.-H. (2004) In vitro enzymatic modification of puerarin to puerarin glycosides by maltogenic amylase. Carbohydr. Res. 339, 2789-2797.