Glycosylation of flavonoid with glucanotransferases

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Many natural compounds are been modified to improve their usefulness. 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[1]. Glucanotransferase transfers glucosyl residues to the acceptor molecules to produce glycosyl-transfer products. We used 4-α-glucanotransferase (4-α-GT) from *Thermotoga maritina* to modify flavonoids. 4-α-GT was cloned into *E. coli* expression vector pRSET as His-tag fusion protein and purified with Histag affinity column[2]. 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. 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.

References

1. Lee, S. J.; Kim, J. C.; Kim, M. J.; Kitaoka, M.; Park, C. S.; Lee, S. Y.; Ra, M. J.; Moon, T. W.; Robyt, J. F.; Park, K. H. Transglycosylation of naringin by *Bacillus stearothermophilus* maltogenic amylase to give glycosylated naringin. *J. Agric. Food Chem.* 1999, *47*, 3669-3674.
2. Kim KY, Kim CH. 2004. Expression of *Thermotoga maritime* 4-α-glucanotransferase gene in *E. coli* and characterization of the recombinant enzyme. Agric. Chem. Biotechnol. 47, 133-136.