Biotransformation of Flavonoids with Glycosyltransferase from *Bacillus cereus*

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Abstract

Microorganisms have great potentials as gene sources which can be used to modify natural compounds. Since the advent of genome projects, it is much easier to access various genomes. Glycosyltransferase that is easily found in microorganism genome can convert many small lipophilic compounds such as phenolics, terpenoids, cyanohydrins and alkaloids which are sugar acceptors into glycon by using uridine-diphophate-activated sugar. The main chemical functions of glycosylation process are stabilization, detoxification and solubilization of the substrates. One of the UDP-glycosyltransferase, *BcGT1* from *Bacillus cereus* was cloned by polymerase chain reaction and sequenced. It showed the homology with UDP-glycosyltransferase (UDPGT). *BcGT1* was expressed in *Escherichia coli* BL21 DE3 strain with his-tag and purified by using His-tag affinity column. To determine substrate specificity, apigenin, daidzein, genistein, kaempferol, luteolin, naringenin and quercetin were used as tentative substrates and reactions products were analyzed with thin layer chromatography (TLC) and high performance liquid chromatography (HPLC). All substrates tested were converted into the corresponding glucosides. Also, glycosylations at different hydroxyl groups were observed in some flavonoids, indicating that BcGT1 has a broad substrate range.

References

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