Characterization of Glycosyltransferase from *Arabidopsis thaliana*

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Flavonoids are phytochemicals with structural diversities, which results from several modification reactions such as methylation, hydroxylation, and glycosylation[1]. Among them, glycosylation of flavonoids that are mediated by glycosyltransferase (GT) family 1 has effects on solubility, stability and bioavailability. A GT, AtGT-1 from *Arabidopsis thaliana* was cloned based on the homology with flavonoid GT from other plants[2,3]. Open reading frame of AtGT-1 consists of 1483bp which predicts to encode 55.7kDa protein. BLAST analysis showed that AtGT-1 showed the high homology with UDP-glucose glucosyltransferases, some of which were known to use plant secondary metabolites such as phenylpropanoids, alkaloids and flavonoids. It was expressed in *E. coli* as a gluthatione S- transferase (GST) fusion protein. The recombinant AtGT-1 wastested with several flavonoids such as naringenin, daidzein, genistein, kaempferol, and quercetinall of which contained 7-hydroxy group. Among them, it could glycosylate quercetin most effectively. Based on in vitro substrate study and the expression analysis of AtGT-1, it is likely that AtGT-1specially transfers a glucose into 7'-hydroxy group.

References

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