Functional analysis of a rice glycosyltransferase

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Abstract

Flavonoids are secondary metabolites found in plants and stored as glycosylated form. Conversion of aglycon to glycon of flavonoids is mediated by glycosyltransferase family 1 (UGT). In rice, more than 190 UGT exist. For the functional analysis of UGTs from rice, individual UGTs have been cloned and expressed in *E. coli*. In this study, one of UGTs, RGT5, was characterized in vitro. RGT5 was cloned and expressed in *E. coli* as a gluthatione S- transferase (GST) fusion protein. To determine substrates, taxifolin, isorhamnetin, kaempferol, luteolin, naringenin and quercetin were used as tentative substrates and reactions products were analyzed with high performance liquid chromatography (HPLC). RGT5 react to flavonols such as quercetin, isorhamnetin and keamferol, and converts quercetin into the corresponding glycoside most effectively. Based on retention time and UV-spectrum with authentic glycosylated flavonoids, RGT-5 is 3-O-glycosyltransferase.

References

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