Modification of flavonoids with glycosyltransferases from Xanthomonas campestris

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Abstract

Flavonoids are a group of chemical compounds naturally found in certain fruits, vegetables, teas, wines, nuts, seeds, and roots. Although not considered vitamins, flavonoids have a number of nutritional functions have been described as biological response modifiers; most act as antioxidants, and some have anti-inflammitory properties. Flavonoids have been shown to prevent or slow the development of some cancers. Flavonoids are phytochemicals with structural diversities, which results from several modification reactions such as methylation, hydroxylation, and glycosylation. Among them, glycosylation of flavonoids that are mediated by glycosyltransferase (GT) family 1 has effects on solubility, stability and bioavailability. A glycosyltranferases, *XcGT-2* from *Xanthomonas campestris* was cloned based on the homology with flavonoid GT from other microorganisms and expressed in *E. coli* as a gluthatione S- transferase (GST) fusion protein. The recombinant XcGT-2 was used to modify several flavonoids. Analysis of reaction products with thin layer chromatography and HPLC showed that luteolin, quercetin, myricetin, fisetin and gossypetin, all of which are flavone containing 3-hydroxyl group, were glycosylated. It indicated that XcGT-2 transfers a glucose molecule into 3'-hydroxy group of flavone.

References

1. Da Silva Ac et al., Comparison of the genomes of two *Xanthomonas* pathogens with differing host specificities. Nature. 2002, 417,459-63.