

A Low Molecular Weight Flavonoid O-methyltransferase from Rice

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Abstract

In plants, O-methylation of phenolic compounds plays an important role in such process as lignin synthesis, flower pigmentation, chemical defense, and signaling. OMTs were classified based on the substrates and molecular weight and OMTs from plant are known to be highly specific. ROMT17 was cloned from rice by RT-PCR method. The blast result showed high homology with caffeoyl-CoA 3-O-methyltransferase(CCoAOMT) and molecular weight of the predicted protein is about 28kDa which is close to CCoAOMT. ROMT 17 was expressed in *E. coli* to study the substrate of each product. Several substrates including 7,8,3',4'-tetra hydroxy flavone, naringenin, quercetin, eryodictyol 3,5,7,3',4',5'-hydroxy flavone, keampferol, catechin and caffeic acid were tested. Reaction products were analyzed by TLC and HPLC. Both use not only flavonoids such as quercetin, 5, 3', 4'-trihydroxyflavone, 7,8,3',4'-tetra hydroxy flavone, 3,5,7,3',4',5'-hydroxy flavone, catechin but also phenyl propanoid such as caffeic acid as substrates. ROMT-17 is novel subclass since it have broad substrate range . In addition, when quercetin and 3,5,7,3',4',5'-hydroxy flavone was used as a substrate, two and four different reaction products were observed. The methyl position of products will be identified through MS and NMR analysis.

References

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