

A Novel Class of *O*-Methyltransferases from Rice

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Methyltransferases are essential enzymes for directing intermediates into specific biosynthetic pathways²⁾. Enzymatic *O*-methylation, catalyzed by *S*-adenosyl-L-methionine dependent OMTs, is a ubiquitous reaction that takes place in almost all organisms including fungi, plants, bacteria, and mammals²⁾. In plants, *O*-methylation of phenolic compounds plays an important role in such process as lignin synthesis, flower pigmentation, chemical defense, and signaling¹⁾. 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 CCoAOMT²⁾. 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, kamperol, 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 NMR analysis.

References

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