Characterization of new flavonoids *O*-methylatransferase, SaOMT5 cloned from *Streptomyces avermitilis*

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Streptomyces avermitilis is one of *Streptomyces* species to be able to methylate on hydroxyl group of substrates[1)]. Based on the sequence homologous search, a novel gene which contained methyltransferase domain was found, and cloned by PCR using sequence-specific oligonucleotide primers. Identification of a flavonoid methylating activity, and expression and purification of enzyme revealed that an *O*-methyltransferase (OMT) cloned from *Streptomyces avermitilis*, SaOMT5 was a novel *S*-adenosyl-L-methionine dependent *O*-methyltransferase. The methylated positions of its substrates were determined by TLC, HPLC, and NMR. This OMT favored *ortho*-dihydroxyflavones as its substrate and 6,7-dihydroxyflavone was the best substrate. SaOMT5 was revealed to Mg^{2+}-dependent OMT based on the test of metal ion effect. The effect of Mg^{2+} ion on its activity is five times greater than those of Ca^{2+}, Fe^{2+}, Cu^{2+}ion, and metal-free conditions. Because its molecular mass is 24.7 kDa and it is Mg^{2+}-dependent OMT, according to the classification of plant OMT, it can belong to class I plant OMT. Based on its substrates, however, it should belong to class II plant OMT[2)]. As a result, SaOMT5 can be classified both class I and class II plant OMT.

References

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