

Flavonoid O-methyltransferase from *Bacillus cereus*

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Abstract

Flavonoids are phytochemicals found in nature. Antioxidant and estrogenic activity are typical biological function of flavonoids. Biological modifications of flavonoid structure have been important due to conferring regiospecificity to natural compounds.

O-Methylation reaction is one of common modification reactions found in nature. O-methylation is mediated by an enzyme O-methyltransferase (OMT). OMTs are studied mainly in plants. Only a few OMTs have been studied in microbes. *Bacillus cereus* genome was searched and found four putative small molecular OMTs which belong to methyltransferase class 3. One of them, BcOMT-1 was cloned, and expressed in *E. coli* as a his-tag fusion protein. The whole cell harboring BcOMT-1 was used to methylate several flavonoids. Eriodictyol, luteolin, quercetin, and taxifolin, all of which contain 3' and 4' hydroxyl group served as methyl group acceptors for BcOMT-1. Analysis of reaction products with HPLC showed two different peaks. Comparison of reaction products with known compounds indicated that methylation positions are likely to be either 3' or 4' of flavonoids, which is a typical property of methyltransferase class 3.

References

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