UNLOCKING BROMINATION MECHANISMS OF ANTIFOULING METABOLITES IN THE RED ALGAE LAURENCIA SPP.

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Abstract

The red algae *Laurencia* spp. produce a variety of halogenated, mostly brominated compounds. These compounds showed promising biological activities, including antifouling activities. 1 Bromination mechanisms in biosynthesis of these compounds have been a research interest of marine natural product chemistry for many years. Vanadium-dependent Bromoperoxidase (VBPO) has been believed to play a significant role in bromination and cyclization for *Laurencia* metabolites. We reported the basic characteristics of VBPO from *Laurencia*. In this presentation, we will show that these VBPOs produce a variety of natural compounds reported from *Laurencia* spp. Transcritome data of *Laurencia* spp. were useful in obtaining the sequence data of VBPOs from *Laurencia*. We successfully converted a linear compound, laurediol to deacetyllaurencin, which is a mono-brominated cyclic compound and a precursor of laurencin. In addition, we will show conversion into dibrominated compounds as well as bromochloro compounds. VBPO enzymes are not only useful for enzymatic production of antifouling compounds but also can be used as biocatalysts for production of brominated compounds, which are industrially important. (1) Oguri Y., Okino T. *et. al.*,*New Marine Antifouling Compounds from the Red Alga Laurencia sp.*, *Marine Drugs*, 15, 267, 2017, DOI :10.3390/md15090267

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