

Iterative Halogenases for Late-Stage C-H Functionalization

TECHNOLOGY NUMBER: 2019-009



OVERVIEW

Characterization of a unique flavin-dependent halogenase named PltM

- Capable of utilizing a wide range of halides for installation on phenolic compounds
- Complexes with and recycles flavin adenine dinucleotide (FAD)

BACKGROUND

Halogenation is an important chemical modification that carries the potential to increase biological activity and bioavailability of molecules. However, controlled halogenation of chemically versatile substrates is difficult to achieve. The development of halogenation tools has focused on naturally occurring or mutated enzymes that yield the desired products. A bacterial halogenase PltM was isolated and found to produce anti-fungal compounds. Given the favorable characteristics of PltM, a need was determined to define its possible halogenation substrates and products.

INNOVATION

Researchers have discovered that the unique flavin-dependent halogenase, PltM, is capable of utilizing a wide range of halides for installation on a diverse array of phenolic compounds. PltM can cause halogenation of existing therapeutic agents and natural products such as terbutaline, fenoterol, resveratrol, and catechin. PltM shows an unusual ability to complex with flavin adenine dinucleotide (FAD) to recycle its ability to act as an important substrate for energy transfer in cellular respiration.

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Category

Chemical Processes and
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