Creative Enzymes®

N-acetyldemethylphosphinothricin P-methyltransferase

Cat. No. EXWM-1934

Lot. No. (See product label)

Introduction

Description	The enzyme was originally characterized from bacteria that produce the tripeptides bialaphos and phosalacine, which inhibit plant and bacterial glutamine synthetases. It is a radical S-adenosyl-L-methionine (SAM) enzyme that contains a [4Fe-4S] center and a methylcob(III)alamin cofactor. According to the proposed mechanism, the reduced iron-sulfur center donates an electron to SAM, resulting in homolytic cleavage of the carbon-sulfur bond to form a 5'-deoxyadenosyl radical that abstracts the hydrogen atom from the P-H bond of the substrate, forming a phosphinate-centered radical. This radical reacts with methylcob(III)alamin to produce the methylated product and cob(II)alamin, which is reduced by an unknown donor to cob(I)alamin. A potential route for restoring the latter back to methylcob(III)alamin is a nucleophilic attack on a second SAM molecule. The enzyme acts in vivo on N-acetyldemethylphosphinothricin-L-alanyl-L-alanine or N-acetyl-demethylphosphinothricin-L-alanyl-L-leucine, the intermediates in the biosynthesis of bialaphos and phosalacine, respectively. This transformation produces the only example of a carbon-phosphorus-carbon linkage known to occur in nature.
Synonyms	phpK (gene name); bcpD (gene name); P-methylase

Product Information

Form	Liquid or lyophilized powder
EC Number	EC 2.1.1.326
Reaction	2 S-adenosyl-L-methionine + N-acetyldemethylphosphinothricin + reduced acceptor = S-adenosyl-L-homocysteine + 5'-deoxyadenosine + L-methionine + N-acetylphosphinothricin + oxidized acceptor
Notes	This item requires custom production and lead time is between 5-9 weeks. We can custom produce according to your specifications.

Storage and Shipping Information

Storage	Store it at +4 ℃ for short term. For long term storage, store it at -20 ℃~-80 ℃.