Creative Enzymes®

thiamine phosphate synthase

Cat. No. EXWM-2767

Lot. No. (See product label)

Introduction

Description

The enzyme catalyses the penultimate reaction in thiamine de novo biosynthesis, condensing the pyrimidine and thiazole components. The enzyme is thought to accept the product of EC 2.8.1.10, thiazole synthase, as its substrate. However, it has been shown that in some bacteria, such as Bacillus subtilis, an additional enzyme, thiazole tautomerase (EC 5.3.99.10) converts that compound into its tautomer 2-(2-carboxy-4-methylthiazol-5-yl)ethyl phosphate, and that it is the latter that serves as the substrate for the synthase. In addition to this activity, the enzyme participates in a salvage pathway, acting on 4-methyl-5-(2-phosphono-oxyethyl)thiazole, which is produced from thiamine degradation products. In yeast this activity is found in a bifunctional enzyme (THI6) and in the plant Arabidopsis thaliana the activity is part of a trifunctional enzyme (TH1).

Synonyms

thiamine phosphate pyrophosphorylase; thiamine monophosphate pyrophosphorylase; TMP-PPase; thiamine-phosphate diphosphorylase; thiE (gene name); TH1 (gene name); THI6 (gene name); 2-methyl-4-amino-5-hydroxymethylpyrimidine-diphosphate:4-methyl-5-(2-phosphoethyl)thiazole 2-methyl-4-aminopyrimidine-5-methenyltransferase

Product Information

Form

Liquid or lyophilized powder

EC Number

EC 2.5.1.3

CAS No.

9030-30-2

Reaction

(1) 4-amino-2-methyl-5-(diphosphomethyl)pyrimidine + 2-[(2R,5Z)-2-carboxy-4-methylthiazol-5(2H)-ylidene]ethyl phosphate = diphosphate + thiamine phosphate + CO2; (2) 4-amino-2-methyl-5-(diphosphomethyl)pyrimidine + 2-(2-carboxy-4-methylthiazol-5-yl)ethyl phosphate = diphosphate + thiamine phosphate + CO2; (3) 4-amino-2-methyl-5-(diphosphomethyl)pyrimidine + 4-methyl-5-(2-phosphono-oxyethyl)thiazole = diphosphate + thiamine phosphate

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 ℃.