Creative Enzymes®

GDP-4-dehydro-6-deoxy-α-D-mannose 3-dehydratase

Cat. No. EXWM-5009

Lot. No. (See product label)

Introduction

Description

This enzyme, involved in β-L-colitose biosynthesis, is a unique vitamin-B6-dependent enzyme. In the first step of catalysis, the bound pyridoxal phosphate (PLP) cafactor is transaminated to the pyridoxamine 5'-phosphate (PMP) form of vitamin B6, using L-glutamate as the amino group donor. The PMP cofactor then forms a Schiff base with the sugar substrate and the resulting adduct undergoes a 1,4-dehydration to eliminate the 3-OH group. Hydrolysis of the product from the enzyme restores the PLP cofactor and results in the release of an unstable enamine intermediate. This intermediate tautomerizes to form an imine form, which hydrolyses spontaneously, releasing ammonia and forming the final product.

Synonyms

colD (gene name)

Product Information

Form

Liquid or lyophilized powder

EC Number

EC 4.2.1.168

Reaction

GDP-4-dehydro-α-D-rhamnose + L-glutamate = GDP-4-dehydro-3,6-dideoxy-α-D-mannose + 2-oxoglutarate + ammonia (overall reaction); (1a) GDP-4-dehydro-α-D-rhamnose + L-glutamate = 2-GDP-[(2S,3S,6R)-5-amino-6-methyl-3,6-dihydro-2H-pyran-3-ol] + 2-oxoglutarate + H2O; (1b) 2-GDP-[(2S,3S,6R)-5-amino-6-methyl-3,6-dihydro-2H-pyran-3-ol] = 2-GDP-[(2S,3S,6R)-5-imino-6-methyloxan-3-ol] (spontaneous); (1c) GDP-2-[(2S,3S,6R)-5-imino-6-methyloxan-3-ol] + H2O = GDP-4-dehydro-3,6-dideoxy-α-D-mannose + ammonia (spontaneous)

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 ℃.