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 ℃.