

## GDP-4-dehydro-6-deoxy- $\alpha$ -D-mannose 3-dehydratase

Cat. No. EXWM-5009

Lot. No. (See product label)

### Introduction

**Description** This enzyme, involved in  $\beta$ -L-colitose biosynthesis, is a unique vitamin-B6-dependent enzyme. In the first step of catalysis, the bound pyridoxal phosphate (PLP) cofactor 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- $\alpha$ -D-rhamnose + L-glutamate = GDP-4-dehydro-3,6-dideoxy- $\alpha$ -D-mannose + 2-oxoglutarate + ammonia (overall reaction); (1a) GDP-4-dehydro- $\alpha$ -D-rhamnose + L-glutamate = 2-GDP-[(2S,3S,6R)-5-amino-6-methyl-3,6-dihydro-2H-pyran-3-ol] + 2-oxoglutarate + H<sub>2</sub>O; (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] + H<sub>2</sub>O = GDP-4-dehydro-3,6-dideoxy- $\alpha$ -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 °C for short term. For long term storage, store it at -20 °C~-80 °C.