

Native Microorganism Phosphoenolpyruvate carboxylase

Cat. No. DIA-212

Lot. No. (See product label)

Introduction

Description

Phosphoenolpyruvate carboxylase is an enzyme in the family of carboxy-lyases found in plants and some bacteria that catalyzes the addition of bicarbonate (HCO_3^-) to phosphoenolpyruvate (PEP) to form the four-carbon compound oxaloacetate and inorganic phosphate: $\text{PEP} + \text{HCO}_3^- \rightarrow \text{oxaloacetate} + \text{Pi}$. This reaction is used for carbon fixation in CAM (crassulacean acid metabolism) and C4 organisms, as well as to regulate flux through the citric acid cycle (also known as Krebs or TCA cycle) in bacteria and plants. The enzyme structure and its two step catalytic, irreversible mechanism have been well studied. PEP carboxylase is highly regulated, both by phosphorylation and allostery.

Applications

This enzyme is useful for enzymatic determination of carbon dioxide when coupled with malate dehydrogenase in clinical analysis.

Synonyms

PEP carboxylase; PEPCase; PEPC; EC 4.1.1.31; Phosphoenolpyruvate carboxylase; PDB ID: 3ZGE

Product Information

Source

Microorganism

Appearance

White amorphous powder, lyophilized

EC Number

EC 4.1.1.31

CAS No.

9067-77-0

Molecular Weight

approx. 390 kDa (by gel filtration)

Activity

Gradelll 5.0U/mg-solid or more

Contaminants

Lactate dehydrogenase < $1.0 \times 10^{-3}\%$ Pyruvate kinase < 0.5%

Isoelectric point

6.0±0.1

pH Stability

pH 5.0-8.0 (25°C, 24hr)

Optimum pH

7.5-8.0

Thermal stability

below 40°C (pH 7.0, 15min)

Optimum temperature

60°C

Michaelis Constant

$1.9 \times 10^{-4}\text{M}$ (Phosphoenolpyruvate)

Structure

4 Subunits (M.W.100,000) per mole of enzyme

Stabilizers

BSA, sugar alcohols

Storage and Shipping Information

Stability

Stable at -20°C for at least one year