Glycerol 3-phosphate Oxidase from *Streptococcus thermophilus*

Catalog Number G4388
Storage Temperature –20 °C

CAS RN 9046-28-0
EC 1.1.3.21
Synonyms: GPO; α-Glycerophosphate oxidase; sn-glycerol-3-phosphate:oxygen 2-oxidoreductase

**Product Description**
Many bacteria and yeast can utilize glycerol as a carbon source. After uptake by the cell glycerol is phosphorylated to α-glycerol-3-phosphate, which in turn is oxidized to enter the glycolytic pathway. α-Glycerophosphate oxidase (GPO) catalyzes the oxidation of α-glycerol-3-phosphate to dihydroxyacetone phosphate by the following reaction:

\[
\text{GPO} \\
\text{Glycerol-3-PO}_4 + O_2 \rightarrow \text{dihydroxyacetone-PO}_4 + H_2O_2
\]

GPO has been used for sensitive metabolite assays of starch and lipid synthesis, pyrophosphate, ATP, ADP, and most glycolytic intermediates in *Arabidopsis* seeds. GPO is part of the dihydroxyacetone phosphate:glycerol-3-phosphate cycle in the bloodstream form of *Trypanosoma brucei*.

Molecular weight: 131 kDa (gel filtration, sucrose density centrifugation) GPO is a dimeric protein with two 72 kDa subunits.

Cofactor: FAD

Optimum pH: 7.5–8.0

Optimum temperature: 2 37 °C

K<sub>M</sub>: 4 mM

Inhibitors: benzylformic acid
glyoxylic acid
methyglyoxal

This product is purified from *Streptococcus thermophilus*. It is supplied as a lyophilized powder.

Protein: ≥60% (Lowry), balance primarily sucrose

Specific activity: ≥10 units/mg solid

Unit definition: One unit will oxidize 1.0 µmole of L-glycerol-3-phosphate to dihydroxyacetone phosphate with the formation of hydrogen peroxide per minute at pH 7.0 at 37 °C.

GPO is assayed spectrophotometrically in a 1.01 ml reaction mixture containing 99 mM potassium phosphate, 0.03% (w/v) 4-aminoantipyrine, 0.02% (w/v) phenol, 5 units peroxidase, 990 mM DL-α-glycerophosphate, 0.01% bovine serum albumin, and 0.02-0.03 unit GPO, at pH 7.0 at 37 °C.

**Precautions and Disclaimer**
This product is for R&D use only, not for drug, household, or other uses. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

**Preparation Instructions**
GPO is soluble (0.45 unit/ml) in cold 20 mM Tris HCl, pH 7.5 at 37 °C, containing 0.2% (w/v) bovine serum albumin. Dissolve immediately before use.

**Storage/Stability**
The product ships on wet ice and storage at –20 °C is recommended. When stored at –20 °C, GPO should retain activity for two years.
References


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