Product Information

3050 Spruce Street, Saint Louis, MO 63103 USA
Tel: (800) 521-8956 (314) 771-5765 Fax: (800) 325-5052 (314) 771-5757
email: techservice@sial.com sigma-aldrich.com

Glycerol 3-phosphate Oxidase
from *Aerococcus viridans*

Catalog Number **G9888**
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:

$$\text{Glycerol-3-PO}_4 + O_2 \xrightarrow{\text{GPO}} \text{dihydroxyacetone-PO}_4 + H_2O_2$$

GPO has been used for sensitive metabolite assays of starch and lipid synthesis, pyrophosphate, ATP, ADP, and most glycolytic intermediates in *Arabidopsis* seeds.[1] GPO is part of the dihydroxyacetone phosphate:glycerol-3-phosphate cycle in the bloodstream form of *Trypanosoma brucei*.[2]

Molecular mass:[3] 63 kDa (SDS-PAGE)
Cofactor:[4] FAD
Optimal pH:[3] 7.5–8.0
Optimal temperature:[2] 37 °C
K_M:[4] 2.3 mM

Activator:[2] Glycerol
Inhibitors:[4] benzylformic acid, glyoxylic acid, methylglyoxal

This product is purified from *Aerococcus viridans*. It is supplied as a lyophilized powder.

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

Specific activity: ≥70 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 8.1 at 37 °C.

GPO is assayed spectrophotometrically in a 1.05 ml reaction mixture containing 60 mM Tris HCl, 5 units peroxidase, 0.06% (v/v) Triton™ X-100, 0.01% (w/v) 4-aminoantipyrine, 0.02% (w/v) phenol, 95 mM DL-α-glycerophosphate, 0.01% bovine serum albumin, and 0.004–0.009 units GPO, at pH 8.1 at 37 °C.

Precautions and Disclaimer
This product is for R&D use only, not for drug, household, or other uses. Please consult the 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. A study of solution storage of GPO has been reported.[4]

Storage/Stability
Store the product at –20 °C. When stored at –20 °C, GPO should retain activity for two years.

References
1. Gibon, Y. *et al.*, *Plant J.*, **30(2)**, 221-235 (2002).
2. Opperdoes, P. *et al*., *Eur. J. Biochem.*, **76(1)**, 29-39 (1977).
3. Streitenberger, S.A. *et. al.*, *Appl. Microbiol. Biotechnol.*, **57(3)**, 329-333 (2001).
4. Macková, M. *et al.*, *Lett. Appl. Microbiol.*, **30(3)**, 188-191 (2000).

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