GRE3 Protein, Saccharomyces cerevisiae

Cat. No.:	HY-P701871
Synonyms:	GRE3; NADPH-dependent aldose reductase GRE3; AR; Genes de respuesta a estres protein 3; NADPH-dependent aldo-keto reductase GRE3; Xylose reductase
Species:	Others
Source:	E. coli
Accession:	P38715 (M1-A327)
Gene ID:	856504
Molecular Weight:	

PROPERTIES

Appearance	Solution.
Formulation	Supplied as a 0.22 μm filtered solution of 50 mM Tris-HCl, pH7.5, 200 mM NaCl, 20% glycerol.
Endotoxin Level	<1 EU/μg, determined by LAL method.
Reconsititution	Please use rapid thawing with running water to thaw the protein.
Storage & Stability	Stored at -80°C for 1 year. It is stable at -20°C for 3 months after opening. It is recommended to freeze aliquots at -80°C for extended storage. Avoid repeated freeze-thaw cycles.
Shipping	Shipping with dry ice.

DESCRIPTION

Background	GRE3 Protein functions as an aldose reductase with a broad substrate specificity, exhibiting the capability to reduce the cytotoxic compound methylglyoxal (MG) to acetol and (R)-lactaldehyde, particularly under stress conditions. Methylglyoxal, synthesized through a bypath of glycolysis from dihydroxyacetone phosphate, is implicated in cell cycle regulation and stress adaptation. In pentose-fermenting yeasts, GRE3 catalyzes the reduction of xylose to xylitol. While the purified enzyme can perform this reaction, the inability of S. cerevisiae to thrive on xylose as a sole carbon source suggests that its physiological function is more likely oriented toward methylglyoxal reduction. This dual role in detoxifying cytotoxic compounds and participating in metabolic pathways underscores GRE3's versatility and importance in cellular stress response and adaptation.

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