Creative Enzymes®

Native Rat Thioredoxin Reductase

Cat. No. NATE-0713

Lot. No. (See product label)

Introduction

Description	Thioredoxin reductase (TrxR) is an NADPH-dependent oxidoreductase containing one FAD per subunit that reduces the active site disulfide in oxidised thioredoxin (Trx). The molecular weight of the isozymes from mammalian sources vary between 55-67 kDa as compared with 35 kDa in prokaryotes, plants or yeast. The substrate specificity of the mammalian enzyme is much broader than the prokaryotic enzyme reducing both mammalian and E. coli thioredoxins as well as well as non-disulfide substrates such selenite, lipoic acids, lipid hydroperoxides and hydrogen peroxide.
Applications	Thioredoxin Reductase from rat liver can be used for studying the uptake and reduction of a-lipoic acid by utilizing reducing capacity of human erythr ocytes. The product can also be used for studying the activation mechanism of transglutaminase 2 (TG2) in the extracellular matrix by using Thioredoxin.
Synonyms	NADP-thioredoxin reductase; NADPH-thioredoxin reductase; thioredoxin reductase (NADPH); NADPH2:oxidized thioredoxin oxidoreductase; thioredoxin-disulfide reductase; EC 1.8.1.9; TrxR; 9074-14-0

Product Information

Species	Rat
Source	Rat liver
Form	buffered aqueous glycerol solution; Solution in 50 mM Tris-HCl, pH 7.5, 300 mM NaCl, 1 mM EDTA, and 10% glycerol.
EC Number	EC 1.8.1.9
CAS No.	9074-14-0
Activity	> 100 units/mg protein (Bradford)
Pathway	Fatty acid, triacylglycerol, and ketone body metabolism, organism-specific biosystem; Metabolism, organism-specific biosystem; Metabolism of lipids and lipoproteins, organism-specific biosystem; Metabolism of nucleotides, organism-specific biosystem; Oxidative Stress, organism-specific biosystem; PPARA Activates Gene Expression, organism-specific biosystem; Pyrimidine metabolism, organism-specific biosystem
Function	NADP binding; electron carrier activity; flavin adenine dinucleotide binding; oxidoreductase activity; protein disulfide oxidoreductase activity; thioredoxin-disulfide reductase activity
Unit Definition	One unit will cause an increase in absorbance of 1.0 at 412 nm (when measured in a non-coupled assay containing DTNB alone as substrate) per minute at pH 7.0 at 25°C.

Storage and Shipping Information

Storage	−20°C