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ProductInformation

Thioredoxin
human T-cell, recombinant
N-terminal histidine tagged
expressed in *E. coli*

Product Number **T 8690**
Storage Temperature –20 °C

CAS# 52500-60-4

Product Description
This product is a human, recombinant, N-terminal histidine tagged protein with a molecular weight of approximately 14 kDa (SDS-PAGE). It is cloned from Jurkat cell cDNA, which is identical to the ADF/Trx (GenBank Accession Number X77584) and the thioredoxin from human placenta (GenBank Accession Number AF085844). The N-terminal histidine tagged, human thioredoxin was found to be active in reduction of insulin.

The active site of thioredoxin contains two vicinal cysteine residues having the amino acid sequence Cys-Gly-Pro-Cys. In the reduced form two sulfhydryl groups are present and when oxidized they form a disulfide bridge. The thioredoxin system includes thioredoxin, which is reduced by thioredoxin reductase with NADPH that serves as the hydrogen donor.

Mammalian thioredoxin can act as a hydrogen donor for ribonucleotide reductase[1] and methionine sulfoxide reductase.[2] It facilitates refolding of disulfide-containing proteins[3,8] and stimulates the proliferation of lymphoid cells, fibroblasts, and a variety of human solid tumor cell lines.[4-7]

Human thioredoxin is used in the investigation of redox regulation. Mammalian thioredoxin is implicated in a wide variety of activities. It activates the glucocorticoid receptor[9] and interleukin 2 receptor,[10] promotes growth in normal and leukemic B-cells,[11] affects the IL-1 and IL-2 activity synergistically,[12] modulates the AP-1 transcriptional activity,[13] and inhibits the apoptosis signal-regulating kinase 1 (ASK1).[14]

The product is supplied as an essentially salt-free, lyophilized powder,

Purity: minimum 90% (SDS-PAGE)

Specific Activity: minimum 5 units/mg protein

Unit definition: One unit will cause a ΔA_{650} of 1.0 in 1 minute at pH 7.5 at 25 °C in the insulin reduction assay. Thioredoxin activity is assessed in an insulin reduction assay, based on the formation of reduced insulin, which precipitates in the presence of a fixed amount of dithiothreitol and suitable amounts of thioredoxin. Precipitation of reduced insulin is monitored by an increase in absorbance at 650 nm.

Precautions and Disclaimer
This product is for laboratory research use only. Please consult the Material Safety Data Sheet for information regarding hazards and safe handling practices.

Preparation Instructions
The product is soluble in water (0.5 mg/ml), yielding a clear, colorless solution.

Storage/Stability
It is recommended to store the product at –20 °C. The lyophilized product is stable for at least 72 hours at 37 °C. With storage at 4 °C, room temperature, or 37 °C, 80-90% of initial activity is found after 24 hours. The reconstituted product is stable for at least 3 hours at 50 °C and for at least 24 hours at –20 °C.

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