**Product Information**

**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 and methionine sulfoxide reductase. It facilitates refolding of disulfide-containing proteins and stimulates the proliferation of lymphoid cells, fibroblasts, and a variety of human solid tumor cell lines.

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 and interleukin 2 receptor, promotes growth in normal and leukemic B-cells, affects the IL-1 and IL-2 activity synergistically, modulates the AP-1 transcriptional activity, and inhibits the apoptosis signal-regulating kinase 1 (ASK1).

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 ΔA₆₅₀ 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.

**References**