

**DESCRIPTION**

<b>Source</b>	<i>E. coli</i> -derived Val2-Lys81 Accession # P10599
<b>N-terminal Sequence Analysis</b>	Val2
<b>Structure / Form</b>	Noncovalently-linked homodimer
<b>Predicted Molecular Mass</b>	9 kDa (monomer)

**SPECIFICATIONS**

<b>Activity</b>	Measured by its ability to induce IFN- $\gamma$ secretion by human peripheral blood mononuclear cells (PBMC) in the presence of IL-2. Pekkari, K. <i>et al.</i> (2001) <i>Blood</i> <b>97</b> :3184. The ED <sub>50</sub> for this effect is 3-9 $\mu$ g/mL in the presence of 8 ng/mL of rIL-2.
<b>Endotoxin Level</b>	<0.10 EU per 1 $\mu$ g of the protein by the LAL method.
<b>Purity</b>	>97%, by SDS-PAGE under reducing conditions and visualized by silver stain.
<b>Formulation</b>	Lyophilized from a 0.2 $\mu$ m filtered solution in Tris, EDTA and DTT. See Certificate of Analysis for details.

**PREPARATION AND STORAGE**

<b>Reconstitution</b>	Reconstitute at 500 $\mu$ g/mL in sterile PBS.
<b>Shipping</b>	The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.
<b>Stability &amp; Storage</b>	<b>Use a manual defrost freezer and avoid repeated freeze-thaw cycles.</b> <ul style="list-style-type: none"> <li>● 12 months from date of receipt, -20 to -70 °C as supplied.</li> <li>● 1 month, 2 to 8 °C under sterile conditions after reconstitution.</li> <li>● 3 months, -20 to -70 °C under sterile conditions after reconstitution.</li> </ul>

**BACKGROUND**

Human thioredoxin 80 (Trx80) is a proteolytic cleavage product of a larger precursor termed thioredoxin. Thioredoxin (Trx) is a 12 - 14 kDa nonglycosylated monomeric 105 amino acid (aa) polypeptide that is synthesized by a wide variety of cells (1 - 3). Trx is a member of the thioredoxin family of proteins that contains a key Cys-X-Tyr-Cys motif that participates in redox reactions (4). Trx is considered the principal disulfide reductase in cells (2, 5). Although it possesses no definitive signal sequence, Trx is secreted and is considered to be the only extracellularly occurring thioredoxin. Trx80, by contrast, is a 10 kDa proteolytic cleavage product of Trx that contains the N-terminal 80 aa residues of Trx (5, 6). This form contains the key CGYC motif found in Trx and shares the same 3-dimensional globular structure as Trx. However, the differences between the molecules are significant. Trx80 lacks Trx's C-terminus and has no oxidoreductase activity. Trx also circulates as a monomer while Trx80 exists as a non-disulfide-linked dimer. Endogenous Trx80 is localized on the plasma membrane of monocytes and macrophages, while Trx is found on the cell surface of various cell types (7). Trx80 also shows significant cytokine activity while Trx has none (5). Cytokine activities attributed to Trx80 include the enhancement of eosinophil ADCC (2), the induction of monocyte proliferation and maturation to a unique IL-10 secreting phenotype, and the upregulation of monocyte membrane CD14, CD40, CD54/ICAM-1, and CD86/B7 (5, 8). A receptor for Trx80 has not been identified. Human Trx80 is 89% aa identical to mouse and rat Trx80, and 35% aa identical to *B. subtilis* Trx.

**References:**

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3. Yamawaki, H. *et al.* (2003) *Circ. Res.* **93**:1029.
4. Rundlof, A.-K. and E. Arner (2004) *Antioxid. Redox Signal.* **6**:41.
5. Pekkari, K. and A. Holmgren (2004) *Antioxid. Redox Signal.* **6**:53.
6. Nakamura, H. (2004) *Antioxid. Redox Signal.* **6**:15.
7. Pekkari, K. *et al.* (2000) *J. Biol. Chem.* **275**:37474.
8. Pekkari, K. *et al.* (2004) *Blood* **105**:1598.