

DESCRIPTION

Source Mouse myeloma cell line, NS0-derived
Cys89-Phe760, with an N-terminal 6-His tag
Accession # CAA25527

N-terminal Sequence Analysis His

Predicted Molecular Mass 76 kDa

SPECIFICATIONS

SDS-PAGE 76-85 kDa, reducing conditions

Activity Measured by its binding ability in a functional ELISA.
When human Holo-Transferrin (Catalog # 2914-HT) is coated at 0.5 µg/mL (100 µL/well), the concentration of rhTfR that produces 50% of the optimal binding response is found to be approximately 3-12 ng/mL.

Endotoxin Level <1.0 EU per 1 µg of the protein by the LAL method.

Purity >90%, by SDS-PAGE under reducing conditions and visualized by silver stain.

Formulation Lyophilized from a 0.2 µm filtered solution in PBS and trehalose. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution Reconstitute at 200 µg/mL in PBS.

Shipping The product is shipped at ambient temperature. Upon receipt, store it immediately at the temperature recommended below.

Stability & Storage **Use a manual defrost freezer and avoid repeated freeze-thaw cycles.**

- 12 months from date of receipt, -20 to -70 °C as supplied.
- 1 month, 2 to 8 °C under sterile conditions after reconstitution.
- 3 months, -20 to -70 °C under sterile conditions after reconstitution.

BACKGROUND

The Transferrin Receptor (TfR or TfR-1, designated CD71) is a type 2 transmembrane glycoprotein expressed on erythroid progenitors, muscle cells and proliferating cells as a 188 kDa disulfide-linked homodimer of 95 kDa monomers (1 - 4). As the major mediator of cellular iron uptake, it binds and internalizes diferric transferrin, allowing iron release at the low pH of the endosome (2, 5). The human TfR cDNA encodes 760 amino acids (aa) including a 67 aa N-terminal intracellular domain, a 21 aa transmembrane domain, and a 672 aa extracellular domain (ECD) with helical, peptidase (nonfunctional), and ligand binding domains, including an RGD potential integrin binding site (5). Human TfR ECD shares 75 - 80% aa identity with mouse, rat, feline, canine, equine, porcine and bovine TfR. A 679 aa alternately spliced form begins at aa 82 and is presumably secreted, while in an 804 aa form, 44 aa are inserted at aa 518 within the peptidase region (6). Most soluble TfR (sTfR) arises from trypsin proteolysis at aa 100, producing the circulating form of TfR (3). sTfR concentration in plasma or serum is proportional to total TfR and can be increased by iron deficiency (3). Erythroid progenitors, which use iron for hemoglobin synthesis, normally account for the bulk of total body TfR production (3). Since rapidly growing cells require iron to replicate DNA, cancer cells can express up to 5-fold more TfR than quiescent cells in the surrounding tissue (2, 4). Antibody targeting of TfR can inhibit tumor cell proliferation and induce apoptosis (2, 4). The hereditary hemochromatosis protein HFE competes with diferric transferrin for binding to TfR, and targets TfR for degradation rather than recycling (2, 5). TfR has been reported to have ferritin-independent functions in T cell development, immunological synapse formation and galectin-3-mediated cell death, and to be a cell entry receptor for New World hemorrhagic fever arenaviruses (2, 4, 7).

References:

1. Schneider, C. *et al.* (1984) *Nature* **311**:675.
2. Daniels, T.R. *et al.* (2006) *Clin. Immunol.* **121**:144.
3. Skikne, B.S. (2008) *Am. J. Hematol.* **83**:872.
4. Macedo, M.F. and M. deSousa (2008) *Inflamm. Allergy Drug Targets* **7**:41.
5. Aisen, P. (2004) *Int. J. Biochem. Cell Biol.* **36**:2137.
6. Entrez protein Accession # EAW53671, EAW53672.
7. Radoshitzky, S.R. *et al.* (2007) *Nature* **446**:92.