Recombinant Human SCF R/c-kit

Catalog Number: 332-SR

DESCRIPTION

Source	*Spodoptera frugiperda*, *Sf* 21 (baculovirus)-derived Gln26-Thr520 Accession # P10721
N-terminal Sequence Analysis	Gln26
Predicted Molecular Mass	55.7 kDa

SPECIFICATIONS

SDS-PAGE	59-63 kDa, reducing conditions
Activity	Measured by its ability to inhibit SCF-dependent proliferation of TF-1 human erythroleukemic cells. Kitamura, T. *et al.* (1989) J. Cell Physiol. **140**:323. The ED_{50} for this effect is typically 2-6 µg/mL in the presence of 8 ng/mL of recombinant human SCF.
Endotoxin Level	<1.0 EU per 1 µg of the protein by the LAL method.
Purity	>95%, by SDS-PAGE under reducing conditions and visualized by silver stain.
Formulation	Lyophilized from a 0.2 µm filtered solution in PBS with Trehalose and with BSA as a carrier protein. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution	Reconstitute at 200 µg/mL in sterile PBS containing at least 0.1% human or bovine serum albumin.
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

Stem Cell Factor Receptor (SCF R), also known as c-Kit and CD117, is a widely expressed 145 kDa receptor tyrosine kinase. It is the cellular homolog of the feline sarcoma virus protein, v-Kit. Binding of SCF R to SCF, also known as Steel Factor and Kit Ligand, promotes the survival, differentiation, and mobilization of progenitor cells in multiple lineages (1-4). Mutations or deletions of SCF R cause a wide variety of malignancies as well as pigmentation disorders and sterility (5, 6). Mature human SCF R consists of a 499 amino acid (aa) extracellular domain (ECD) with five tandem immunoglobulin-like domains, a 21 aa transmembrane segment, and a 431 aa cytoplasmic domain with the split tyrosine kinase domain (7). Within the ECD, human SCF R shares 73% and 76% aa sequence identity with mouse and rat SCF R, respectively. Alternative splicing of human SCF R generates a potentially secreted isoform that corresponds to the first four Ig-like domains. SCF is expressed as transmembrane and soluble noncovalent homodimers (8). One SCF dimer binds to two molecules of SCF R, inducing receptor dimerization and activation (8). Transmembrane SCF induces more prolonged signaling through SCF R compared to soluble SCF (9). Rat SCF is active on mouse and human cells, but human SCF is only weakly active on mouse cells (10). A 100 kDa glycosylated ECD fragment of SCF R can be shed into the circulation by TACE/ADAM17, and this fragment inhibits the interaction of SCF with transmembrane SCF R (11, 12). SCF is a primary growth and activation factor for mast cells and eosinophils (13). SCF R expression on mast cells enables them to infiltrate SCF-secreting tumors where they promote tumor growth and induce local immune suppression (14). SCF R is up-regulated on dendritic cells by Th2- or Th17-biasing stimuli, and it is required for subsequent dendritic cell induction of Th2 and Th17 responses (15). SCF R protects vascular smooth muscle cells from apoptosis and assists in the recovery of cardiac function following myocardial infarction (16, 17).

References:

1. Kimura, Y. *et al.* (2011) PLoS ONE **6**:e26918.
2. Tallini, Y.N. *et al.* (2009) Proc. Natl. Acad. Sci. USA **106**:1808.
3. Bashamboo, A. *et al.* (2006) J. Cell Sci. **119**:3039.
4. Sun, L. *et al.* (2004) J. Clin. Invest. **113**:1364.
5. Pittoni, P. *et al.* (2011) Oncogene **30**:757.
6. Sartini, S. *et al.* (2011) Curr. Med. Chem. **18**:2893.
7. Yarden, Y. *et al.* (1987) EMBO J. **6**:3341.
8. Lemmon, M.A. *et al.* (1997) J. Biol. Chem. **272**:6311.
9. Miyazawa, K. *et al.* (1995) Blood **85**:641.
10. Martin, F.H. *et al.* (1990) Cell **63**:203.
11. Turner, A.M. *et al.* (1995) Blood **85**:2052.
12. Cruz, A.C. *et al.* (2004) J. Biol. Chem. **279**:5612.
13. Jamur, M.C. and C. Oliver (2011) Front. Biosci. (School Ed.) **3**:1390.
14. Huang, B. *et al.* (2008) Blood **112**:1269.
15. Krishnamoorthy, N. *et al.* (2008) Nat. Med. **14**:565.
16. Wang, C.-H. *et al.* (2007) Arterioscler. Thromb. Vasc. Biol. **27**:540.
17. Kanellakis, P. *et al.* (2006) Cardiovasc. Res. **70**:117.