

DESCRIPTION

Source *E. coli*-derived human SCF/c-kit Ligand protein
Glu26-Ala189, with an N-terminal Met
Accession # P21583.1

N-terminal Sequence Analysis Met

Predicted Molecular Mass 19 kDa

SPECIFICATIONS

SDS-PAGE 17-18 kDa, under reducing conditions

Activity Measured in a cell proliferation assay using TF-1 human erythroleukemic cells. Kitamura, T. *et al.* (1989) *J. Cell Physiol.* **140**:323. The ED₅₀ for this effect is 1-5 ng/mL.

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

Purity >97%, by SDS-PAGE visualized with Silver Staining and quantitative densitometry by Coomassie® Blue Staining.

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

PREPARATION AND STORAGE

Reconstitution Reconstitute at 100-200 µg/mL in sterile 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.

DATA

BACKGROUND**What is Stem cell factor?**

Stem cell factor (SCF) is a potent hematopoietic growth factor required in regulating both embryonic and adult hematopoiesis. SCF protein promotes the survival, differentiation, and mobilization of multiple cell types including myeloid, erythroid, megakaryocytic, lymphoid, germ cell, and melanocyte progenitors (1-7). SCF is a primary growth and activation factor for mast cells and eosinophils (8). And SCF assists in the recovery of cardiac function following myocardial infarction by increasing the number of cardiomyocytes and vascular channels (9). Stem cell factor is an important cytokine for ex vivo clinical applications. Along with other cytokines, SCF is used in the culture and expansion of hematopoietic stem cells (HSCs) as well as for proliferation and differentiation of both myeloid and erythroid progenitor cells.

Mature stem cell factor consists of a 189 amino acid (aa) extracellular domain (ECD), a 23 aa transmembrane domain, and a 36 aa cytoplasmic tail (10). The ECD shows both N-linked and O-linked glycosylation (11). SCF protein exists in two forms, a membrane-bound form and a proteolytically processed soluble form that lacks the transmembrane domain and cytoplasmic tail. The soluble form is created by proteolytic cleavage at two alternate sites in the extracellular juxtamembrane region releasing a 25 kDa soluble SCF protein which is comparable to the only form produced by Steel-dickie mutant mice (12, 13). There is also an alternately spliced isoform of human SCF that lacks 28 amino acids that encompasses the primary proteolytic recognition site (14). This form cannot be cleaved and is only membrane bound.

SCF binds to C-kit (CD117). C-kit is expressed on many different cell types including HSCs, mast cells, germ cells, and melanocytes. Binding of SCF to C-kit induces receptor dimerization and autophosphorylation of tyrosine residues in the cytoplasmic domain (15). Tyrosine phosphorylation initiates multiple signaling pathways including RAS, PI3 kinase, Src, and JAK/STAT. Stem cell factor is highly conserved among mammals. Human SCF protein shares 79% 87% aa sequence identity with dog, cat, mouse, and rat SCF. Rat SCF is active on mouse and human cells, but human SCF is only weakly active on mouse cells (10).

References:

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