

Background

Stem cell factor (SCF), also known as c-kit ligand (KL), mast cell growth factor (MGF), and steel factor (SLF), is a widely expressed 28 - 40 kDa type I transmembrane glycoprotein (1). It 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). Mature human SCF consists of a 189 amino acid (aa) extracellular domain (ECD), a 23 aa transmembrane segment, and a 36 aa cytoplasmic tail (9). The ECD shows both N-linked and O-linked glycosylation (10). Proteolytic cleavage at two alternate sites in the extracellular juxtamembrane region releases a 25 kDa soluble molecule which is comparable to the only form produced by Steel-dickie mutant mice (11, 12). An alternately spliced isoform of human SCF lacks 28 aa that encompasses the primary proteolytic recognition site (13). Within the ECD of the short isoform (corresponding to this recombinant protein), human SCF shares 75% - 83% aa sequence identity with canine, feline, mouse, and rat SCF. Rat SCF is active on mouse and human cells, but human SCF is only weakly active on mouse cells (9). Noncovalent dimers of transmembrane or soluble SCF interact with the receptor tyrosine kinase SCF R/c-kit to trigger receptor dimerization and signaling (14). SCF assists in the recovery of cardiac function following myocardial infarction by increasing the number of cardiomyocytes and vascular channels (15).

References:

1. Ashman, L.K. (1999) *Int. J. Biochem. Cell Biol.* **31**:1037.
2. Sette, C. *et al.* (2000) *Int. J. Dev. Biol.* **44**:599.
3. Yoshida, H. *et al.* (2001) *J. Invest. Dermatol. Symp. Proc.* **6**:1.
4. Eriandsson, A. *et al.* (2004) *Exp. Cell Res.* **301**:201.
5. Kapur, R. *et al.* (2002) *Blood* **100**:1287.
6. Wang, C.-H. *et al.* (2007) *Arterioscler. Thromb. Vasc. Biol.* **27**:540.
7. Bashamboo, A. *et al.* (2006) *J. Cell Sci.* **119**:3039.
8. Reber, L. *et al.* (2006) *Eur. J. Pharmacol.* **533**:327.
9. Martin, F.H. *et al.* (1990) *Cell* **63**:203.
10. Arakawa, T. *et al.* (1991) *J. Biol. Chem.* **266**:18942.
11. Majumdar, M.K. *et al.* (1994) *J. Biol. Chem.* **269**:1237.
12. Brannan, C.I. *et al.* (1991) *Proc. Natl. Acad. Sci.* **88**:4671.
13. Anderson, D.M. *et al.* (1991) *Cell Growth Differ.* **2**:373.
14. Lemmon, M.A. *et al.* (1997) *J. Biol. Chem.* **272**:6311.
15. Kanellakis, P. *et al.* (2006) *Cardiovasc. Res.* **70**:117.

Description

Source	<i>E. coli</i> -derived Glu26 - Ala189 Accession # P21583.1
N-terminal Sequence Analysis	Glu26
Predicted Molecular Mass	18.6 kDa

Specifications

Activity	Measured in a cell proliferation assay using TF-1 human erythroleukemic cells. Kitamura, T. <i>et al.</i> (1989) <i>J. Cell Physiol.</i> 140 :323. The ED ₅₀ for this effect is typically 2.5 - 10 ng/mL.
Endotoxin Level	<1.0 EU per 1 µg of the protein by the LAL method.
Purity	>97%, by SDS-PAGE under reducing conditions and visualized by silver stain.
Formulation	Lyophilized from a 0.2 µm filtered solution in PBS with BSA as a carrier protein. See Certificate of Analysis for details.

Preparation and Storage

Reconstitution	Reconstitute at 10 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. <ul style="list-style-type: none"> ● 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.

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