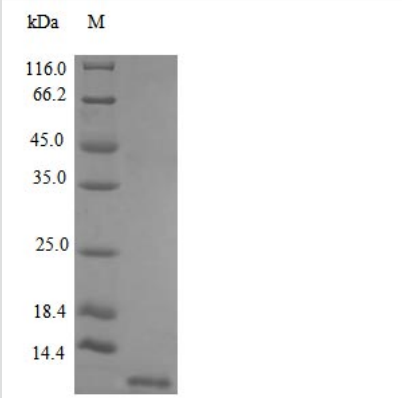
Recombinant Human Stromal cell-derived factor 1 protein (CXCL12) (Active)

Product Code	CSB-AP000741HU
Abbreviation	Recombinant Human CXCL12 protein, partial (Active)
Uniprot No.	P48061
Storage Buffer	20 mM PB pH 7.0, 130 mM NaCl
Product Type	Chemokines
Immunogen Species	Homo sapiens (Human)
Biological Activity	Fully biologically active when compared to standard. The biological activity determined by a chemotaxis bioassay using PHA and rHuIL-2 activated human peripheral blood T-lymphocytes is in a concentration range of 20-80 ng/ml.
Purity	>97% as determined by SDS-PAGE.
Sequence	KPVSLSYRCP CRFFESHVAR ANVKHLKILN TPNCALQIVA RLKNNNRQVC IDPKLKWIQE YLEKALNK
Research Area	Immunology
Source	E.Coli
Target Names	CXCL12
Expression Region	22-89aa
Tag Info	Tag-Free
Mol. Weight	8.0 kDa
Protein Length	Full Length of Mature Protein of Isoform Alpha
PubMed ID	7490086; 16626895; 14702039; 16344560; 15164054; 15489334; 8752281; 9427609; 10446158; 11069075; 11859124; 14525775; 16107333; 15741341; 16725153; 18802065; 19255243; 22457824; 9384579; 9618518; 10954912; 15588815; 17264079; 17357154; 18799424; 19551879;
Image	

Description

Recombinant Human Stromal cell-derived factor 1 protein (CXCL12) is produced in an E. coli expression system and represents a partial sequence spanning amino acids 22 to 89. This tag-free protein achieves a purity level exceeding 97%, as confirmed by SDS-PAGE analysis. It appears to be fully biologically active, with activity validated via a chemotaxis bioassay using activated human peripheral blood T-lymphocytes, effective at concentrations between 20-80 ng/ml. The endotoxin level remains below 1.0 EU/μg, as determined by the LAL method.

CXCL12, also known as Stromal cell-derived factor 1, plays what seems to be a crucial role in cellular signaling. This chemokine functions primarily in the immune system, directing the movement and localization of cells through chemotaxis. CXCL12 is integral to processes such as hematopoiesis and organ development, which makes it a significant focus in research related to cell migration and immune response pathways.

Potential Applications

Note: The applications listed below are based on what we know about this protein's biological functions, published research, and experience from experts in the field. However, we haven't fully tested all of these applications ourselves yet. We'd recommend running some preliminary tests first to make sure they work for your specific research goals.

1. T-lymphocyte Chemotaxis Assays

This recombinant CXCL12 protein can be used to study T-lymphocyte migration patterns in controlled in vitro environments. Given its demonstrated biological activity in chemotaxis bioassays using PHA and rHuIL-2 activated human peripheral blood T-lymphocytes at concentrations of 20-80 ng/ml, researchers may be able to establish standardized migration assays. The high purity (>97%) and low endotoxin levels make it suitable for sensitive cell-based experiments where contamination could confound results. This application would likely prove valuable for investigating immune cell trafficking mechanisms and screening potential modulators of lymphocyte migration.

2. CXCR4 Receptor Binding Studies

The biologically active CXCL12 protein can serve as a ligand in receptor binding assays to characterize CXCR4 interactions. Researchers might use this protein in competitive binding experiments, saturation binding studies, or kinetic analyses to determine binding affinities and receptor occupancy. The defined concentration range of biological activity (20-80 ng/ml) provides a reasonable starting point for dose-response studies. Such experiments would contribute to understanding CXCR4 pharmacology and could potentially support the development of receptor-targeting compounds.

3. Cell Signaling Pathway Analysis

This recombinant protein can be used to investigate downstream signaling

cascades triggered by CXCL12-CXCR4 interactions in various cell types. Researchers can treat cells with the biologically active protein and analyze phosphorylation events, second messenger generation, or gene expression changes. The low endotoxin content helps ensure that observed cellular responses are specifically attributable to CXCL12 signaling rather than inflammatory contamination. Time-course and dose-response experiments using the established active concentration range would help elucidate the temporal dynamics of CXCL12-induced signaling.

4. Antibody Development and Validation

The high-purity, tag-free CXCL12 protein represents what appears to be an ideal antigen for generating and characterizing anti-CXCL12 antibodies. The protein can be used for immunization protocols, ELISA development, and antibody specificity testing. Since the protein spans amino acids 22-89 of the mature human CXCL12, it contains key epitopes relevant for antibody recognition. The biological activity confirmation suggests that antibodies developed against this protein are likely to recognize the native, functional form of CXCL12.

5. Protein-Protein Interaction Studies

This biologically active CXCL12 can be used in pull-down assays, surface plasmon resonance, or other biochemical techniques to identify and characterize protein interactions beyond the canonical CXCR4 receptor. The tag-free nature of the protein minimizes potential artifacts from fusion tags that might interfere with native protein interactions. Researchers can investigate binding partners, co-receptors, or regulatory proteins that may modulate CXCL12 function. The established biological activity serves as a quality control measure to help ensure the protein maintains its native conformation during interaction studies.

Endotoxin	Less than 1.0 EU/μg as determined by LAL method.
Shelf Life	The shelf life is related to many factors, storage state, buffer ingredients, storage temperature and the stability of the protein itself. Generally, the shelf life of liquid form is 6 months at -20°C/-80°C. The shelf life of lyophilized form is 12 months at -20°C/-80°C.