

**Stromal Cell-Derived Factor-1 Alpha Human Recombinant (CXCL12)  
CHEMOKINE**

**Catalog Number:** PRP-262  
**Quantity:** 2 micrograms, 10 micrograms, 1 milligram  
**Format:** Sterile-filtered white lyophilized (freeze-dried) powder  
**Host:** *E. coli*

**Background:**

SDF-1 (stromal cell-derived factor-1) is a small cytokine belonging to the chemokine family that is officially designated Chemokine (C-X-C motif) ligand 12 (CXCL12). It is produced in two forms, SDF-1a/CXCL12a and SDF-1b/CXCL12b, by alternate splicing of the same gene. Chemokines are characterized by the presence of four conserved cysteines, which form two disulfide bonds. The CXCL12 proteins belong to the CXC chemokine group. The initial pair of cysteines in this group are separated by one amino acid. CXCL12 is strongly chemotactic for lymphocytes and has been implicated as an important cell coordinator during development. During embryogenesis it directs the migration of hematopoietic cells from the fetal liver to bone marrow. CXCL12 knockout mice died either before or within 1 hour of birth. CXCL12a also alters the electrophysiology of neurons. CXCL12 has been shown to be expressed in many mouse tissues including brain, thymus, heart, lung, liver, kidney, spleen, and bone marrow. The receptor for this chemokine is CXCR4, which was previously called fusin. This CXCL12-CXCR4 interaction used to be considered exclusive, unlike other chemokines and their receptors, but recently it was suggested that CXCL12 is also bound by the CXCR7 receptor. The gene for CXCL12 is located on human chromosome 10. Human and mouse CXCL12 and CXCR4 show a high degree of homology, 99% and 90% respectively.

**Specificity and Preparation:**

Stromal cell-derived factor-1 alpha (SDF-1a) human recombinant CXCL12 produced in *E. coli* is a non-glycosylated 68-amino acid polypeptide with a molecular weight of 8004 daltons. The SDF-1a is purified by proprietary chromatographic techniques. The purity is greater than 98.0% as determined by RP-HPLC and SDS-PAGE. The protein was lyophilized from a 1 mg/ml solution containing no additives. Quantitation was carried out by both UV spectrometry at 280 nm using 1.06 as the extinction coefficient and RP-HPLC against a SDF-1a standard solution.

The sequence of the first five N-terminal amino acids was determined and was found to be Lys-Pro-Val-Ser-Leu.

The specific activity as determined by its ability to chemoattract human peripheral T cells activated with PHA and IL-2 using a concentration of 20-80 ng/ml corresponding to a specific activity of 12,500-50,000 IU/mg.

**Usage and Storage:**

It is recommended to reconstitute the lyophilized material in sterile 18M $\Omega$ -cm H<sub>2</sub>O at not less than 100  $\mu$ g/ml, which can then be further diluted to other aqueous solutions.

Lyophilized material although stable at room temperature for 3 weeks, should be stored desiccated below -18 $^{\circ}$ C. Upon reconstitution, material should be stored at 4 $^{\circ}$ C between 2-7 days and for future use below -18 $^{\circ}$ C. For long term storage it is recommended to add a carrier protein (0.1% HSA or BSA). Avoid repeated freezing and thawing. Gently spin down material before use; 5-10 seconds in a microfuge should be adequate.

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