

RANTES/CCL5 Protein, Human

Cat. No.:	HY-P70450
Synonyms:	C-C Motif Chemokine 5; EoCP; Eosinophil Chemotactic Cytokine; SIS-Delta; Small-Inducible Cytokine A5; T Cell-Specific Protein P228; TCP228; T-Cell-Specific Protein RANTES; CCL5; D17S136E; SCYA5
Species:	Human
Source:	E. coli
Accession:	P13501 (S24-S91)
Gene ID:	6352
Molecular Weight:	7-12 kDa

PROPERTIES

AA Sequence	S P Y S S D T T P C C F A Y I A R P L P R A H I K E Y F Y T S G K C S N P A V V F V T R K N R Q V C A N P E K K W V R E Y I N S L E M S
Biological Activity	Fully biologically active when compared to standard. The biological activity determined by a chemotaxis bioassay using human peripheral blood monocytes is in a concentration range of 1.0-10.0 ng/mL.
Appearance	Lyophilized powder.
Formulation	Lyophilized from a 0.2 µm filtered solution of 20 mM PB, 150 mM NaCl, pH 7.4 or 20 mM PB, pH 7.4, 100 mM NaCl or 20 mM Citrate, 6% Trehalose, 4% Mannitol, 0.05% Tween 80, pH 4.0.
Endotoxin Level	<1 EU/µg, determined by LAL method.
Reconstitution	It is not recommended to reconstitute to a concentration less than 100 µg/mL in ddH ₂ O. For long term storage it is recommended to add a carrier protein (0.1% BSA, 5% HSA, 10% FBS or 5% Trehalose).
Storage & Stability	Stored at -20°C for 2 years. After reconstitution, it is stable at 4°C for 1 week or -20°C for longer (with carrier protein). It is recommended to freeze aliquots at -20°C or -80°C for extended storage.
Shipping	Room temperature in continental US; may vary elsewhere.

DESCRIPTION

Background	CCL5, also known as RANTES (Regulation of Activation, Expression and Secretion by Normal T Cells), belongs to the CC subfamily of chemokines. The CCL5 gene is located in the q11.2-q12 region of human chromosome 17 and encodes CCL5 a protein with a molecular weight of 8 kDa. CCL5 can be expressed by T cells, monocytes, NK cells, epithelial cells, fibroblasts, and CCL5 can bind to receptors CCR1, CCR3, CCR4 and CCR5, with the highest affinity for CCR5 ^[1] . CCL5 binding to CCR5 leads to phosphorylation of phosphatidylinositol 3-kinase (PI3K), and the phosphorylated PI3K further acidifies protein kinase B on serine 473, and the Akt/PKB complex phosphorylates and inactivates the serine/threonine protein kinase GSK-3.
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In parallel, CCL5 binding to CCR5 induces Bcl2 protein expression, which promotes cell apoptosis. CCL5 can also act as a potential agonist for the G protein-coupled receptor GPR75, which, together with GPR75, may play a role in neuronal survival by activating downstream signaling pathways involving PI3, Akt, and MAP kinases, and in insulin secretion by pancreatic islet cells by activating GPR75^[2]. In addition to acting as a chemotactic agent, CCL5 is also a major HIV suppressor produced by CD⁸⁺ T cells. It is involved in inflammation maintenance, transplantation, antiviral immunity, tumor development, and many human diseases and disorders such as viral hepatitis or COVID-19^[3].

REFERENCES

- [1]. V Appay, et al. RANTES: a versatile and controversial chemokine. *Trends Immunol.* 2001 Feb;22(2):83-7.
- [2]. Zhen Zeng, et al. CCL5/CCR5 axis in human diseases and related treatments. *Genes Dis.* 2022 Jan;9(1):12-27.
- [3]. F Cocchi, et al. Identification of RANTES, MIP-1 alpha, and MIP-1 beta as the major HIV-suppressive factors produced by CD8+ T cells. *Science.* 1995 Dec 15;270(5243):1811-5.
- [4]. Shih-Wei Wang, et al. CCL5 and CCR5 interaction promotes cell motility in human osteosarcoma. *PLoS One.* 2012;7(4):e35101.
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Caution: Product has not been fully validated for medical applications. For research use only.

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