Recombinant Human IL-33

Catalog Number: 3625-IL

DESCRIPTION

Source	*E. coli*-derived Ser112-Thr270 Accession # O95760
N-terminal Sequence Analysis	Ser112
Predicted Molecular Mass	18 kDa

SPECIFICATIONS

Activity	Measured in a cell proliferation assay using D10.G4.1 mouse helper T cells co-stimulated with anti-CD3. Schmitz, J. *et al.* (2005) Immunity **23**:479. The ED_{50} for this effect is typically 0.06-0.24 ng/mL. This protein has also been shown to induce IL-13 secretion by D10.G4.1 cells under similar conditions. **Optimal dilutions should be determined by each laboratory for each application.**
Endotoxin Level	<0.01 EU per 1 µg of the protein by the LAL method.
Purity	>95%, by SDS-PAGE under reducing conditions and visualized by silver stain.
Formulation	Lyophilized from a 0.2 µm filtered solution in PBS, EDTA and DTT 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.** ● 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.

BACKGROUND

IL-33, also known as NF-HEV and DVS 27, is a 30 kDa proinflammatory protein that may also regulate gene transcription (1 – 3). DVS 27 was identifed as a gene that is upregulated in vasospastic cerebral arteries (1). NF-HEV was described as a nuclear factor that is preferentially expressed in the endothelial cells of high endothelial venules relative to endothelial cells from other tissues (2). IL-33 was identified based on sequence and structural homology with IL-1 family cytokines (3). DVS 27, NF-HEV, and IL-33 share 100% amino acid sequence identity. IL-33 is constitutively expressed in smooth muscle and airway epithelia. It is upregulated in arterial smooth muscle, dermal fibroblasts, and keratinocytes following IL-1α or IL-1β stimulation (1, 3). Similar to IL-1, IL-33 can be cleaved *in vitro* by caspase-1, generating an N-terminal fragment that is slightly shorter than the C-terminal fragment (3, 4). The N-terminal portion of full length IL-33 contains a predicted bipartite nuclear localization sequence and a homeodomain-like helix-turn-helix DNA binding domain. By immunofluorescence, full length IL-33 localizes to the nucleus in HUVECs and transfectants (2). The C-terminal fragment, corresponding to mature IL-33, binds and triggers signaling through mast cell IL-1 R4/ST2L, a longtime orphan receptor involved in the augmentation of Th2 cell responses (3, 5 – 7). A ternary signaling complex is formed by the subsequent association of IL-33 and ST2L with IL-1R AcP (8). Stimulation of Th2 polarized lymphocytes with mature IL-33 *in vitro* induces IL-5 and IL-13 secretion (3). *In vivo* administration of mature IL-33 promotes increased production of IL-5, IL-13, IgE, and IgA, as well as splenomegaly and inflammatory infiltration of mucosal tissues (3). Full length and mature human IL-33 share 52 – 58% aa sequence identity with mouse and rat IL-33. Human IL-33 shares less than 20% aa sequence identity with other IL-1 family proteins.

References:

1. Onda, H. *et al.* (1999) J. Cereb. Blood Flow Metab. **19**:1279.
2. Baekkevold, E.S. *et al.* (2003) Am. J. Pathol. **163**:69.
3. Schmitz, J. *et al.* (2005) Immunity **23**:479.
4. Black, R.A. *et al.* (1989) J. Biol. Chem. **264**:5323.
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6. Lohning, M. *et al.* (1998) Proc. Natl. Acad. Sci. **95**:6930.
7. Dinarello, C.A. (2005) Immunity **23**:461.
8. Chackerian, A.A. *et al.* (2007) J. Immunol. **179**:2551.