

DESCRIPTION

Source	<i>E. coli</i> -derived Asn49-Ser162 Accession # P40933
N-terminal Sequence Analysis	Asn49
Predicted Molecular Mass	13 kDa

SPECIFICATIONS

SDS-PAGE	10 kDa, reducing conditions
Activity	Measured in a cell proliferation assay using MO7e human megakaryocytic leukemic cells. The ED ₅₀ for this effect is 0.3-2.6 ng/mL. The specific activity of Recombinant Human IL-15 is approximately 4.5 x 10 ⁵ U/μg, which is calibrated against recombinant human IL-15 WHO International Standard (NIBSC code: 95/554).
Endotoxin Level	<0.10 EU per 1 μg of the protein by the LAL method.
Purity	>97%, by SDS-PAGE with silver staining.
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 100 μg/mL in sterile PBS.
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.

DATA

<p>Bioactivity</p> <p>Recombinant Human IL-15 (Catalog # 247-ILB) stimulates cell proliferation in the MO7e human megakaryocytic leukemic cell line. The ED₅₀ for this effect is 0.3-2.6 ng/mL.</p>	<p>SDS-PAGE</p> <p>1 μg/lane of Recombinant Human IL-15 was resolved with SDS-PAGE under reducing (R) conditions and visualized by silver staining, showing a major band at 10 kDa.</p>
---	--

BACKGROUND

Interleukin 15 (IL-15) is a widely expressed 14 kDa cytokine that is structurally and functionally related to IL-2 and plays an important role in many immunological diseases (1, 2). Mature human IL-15 shares 70% amino acid sequence identity with mouse and rat IL-15. Alternative splicing generates isoforms of IL-15 with either a long or short signal peptide (LSP or SSP), and the SSP isoform is retained intracellularly (3). IL-15 binds with high affinity to IL-15 R α (4). It binds with lower affinity to a complex of IL-2 R β and the common gamma chain (γ c) which are also subunits of the IL-2 receptor complex (5). IL-15 associates with IL-15 R α in the endoplasmic reticulum, and this complex is expressed on the cell surface (6). The dominant mechanism of IL-15 action is known as transpresentation in which IL-15 and IL-15 R α are coordinately expressed on the surface of one cell and interact with complexes of IL-2 R β / γ c on adjacent cells (7). This enables cells to respond to IL-15 even if they do not express IL-15 R α (6). In human and mouse, soluble IL-15-binding forms of IL-15 R α can be generated by proteolytic shedding and bind up nearly all the IL-15 in circulation (8-10). Soluble IL-15 R α functions as an inhibitor that limits IL-15 action (4, 9). Ligand of membrane-associated IL-15/IL-15 R α complexes also induces reverse signaling that promotes activation of the IL-15/IL-15 R α expressing cells (11). IL-15 induces or enhances the differentiation, maintenance, or activation of multiple T cell subsets including NK, NKT, Th17, Treg, and CD8⁺ memory cells (12 - 16). An important component of these functions is the ability of IL-15 to induce dendritic cell differentiation and inflammatory activation (11, 14). IL-15 exhibits anti-tumor activity independent of its actions on NK cells or CD8⁺ T cells (17). It also inhibits the deposition of lipid in adipocytes, and its circulating levels are decreased in obesity (18).

References:

1. De Sabatino, A. *et al.* (2011) Cytokine Growth Factor Rev. **22**:19.
2. Grabstein, K. *et al.* (1994) Science **264**:965.
3. Tagaya, Y. *et al.* (1997) Proc. Natl. Acad. Sci. USA **94**:14444.
4. Giri, J.G. *et al.* (1995) EMBO J. **14**:3654.
5. Giri, J. *et al.* (1994) EMBO J. **13**:2822.
6. Dubois, S. *et al.* (2002) Immunity **17**:537.
7. Castillo, E.F. and K.S. Schluns (2012) Cytokine **59**:479.
8. Budagian, V. *et al.* (2004) J. Biol. Chem. **279**:40368.
9. Mortier, E. *et al.* (2004) J. Immunol. **173**:1681.
10. Bergamaschi, C. *et al.* (2012) Blood **120**:e1.
11. Budagian, V. *et al.* (2004) J. Biol. Chem. **279**:42192.
12. Mortier, E. *et al.* (2003) J. Exp. Med. **205**:1213.
13. Gordy, L.E. *et al.* (2011) J. Immunol. **187**:6335.
14. Harris, K.M. (2011) J. Leukoc. Biol. **90**:727.
15. Xia, J. *et al.* (2010) Clin. Immunol. **134**:130.
16. Schluns, K.S. *et al.* (2002) J. Immunol. **168**:4827.
17. Davies, E. *et al.* (2010) J. Leukoc. Biol. **88**:529.
18. Barra, N.G. *et al.* (2010) Obesity **18**:1601.