

DESCRIPTION

Source	<i>E. coli</i> -derived human IL-7 protein Asp26-His177, with an N-terminal Met Accession # P13232
N-terminal Sequence Analysis	Met
Predicted Molecular Mass	17 kDa

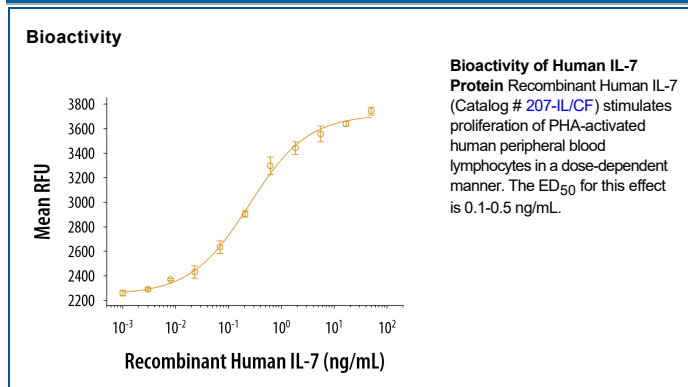
SPECIFICATIONS

Activity	Measured in a cell proliferation assay using PHA-activated human peripheral blood lymphocytes (PBL). Yokota, T. <i>et al.</i> (1986) Proc. Natl. Acad. Sci. USA 83 :5894. The ED ₅₀ for this effect is 0.1-0.5 ng/mL. The specific activity of Recombinant Human IL-7 is approximately 4.4 x 10 ⁵ IU/μg, which is calibrated against human IL-7 WHO International Standard (NIBSC code: 90/530). Specific activity is for reference purposes only and is not routinely tested.
Endotoxin Level	<0.01 EU per 1 μg of the protein by the LAL method.
Purity	>97%, by SDS-PAGE under reducing conditions and visualized by silver stain.
Formulation	Lyophilized from a 0.2 μm filtered solution in PBS. *1 mg pack size (01M) is supplied as a 0.2 μm filtered solution in PBS. See Certificate of Analysis for details.

PREPARATION AND STORAGE

Reconstitution	Reconstitute 5 μg vials at 50 μg/mL in sterile PBS. Reconstitute 10 μg or larger vials 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



BACKGROUND

IL-7 (interleukin-7) is a 25 kDa cytokine of the hemopoietin family that plays important roles in lymphocyte differentiation, proliferation, and survival (1-4). Human IL-7 cDNA encodes 177 amino acids (aa) that include a 25 aa signal peptide (3). Human IL-7 shares approximately 60-63% aa sequence identity with mouse, rat, canine and feline IL-7, and 72-76% with equine, bovine, ovine, porcine, feline and canine IL-7. Human and mouse IL-7 exhibit cross-species activity (2, 3). IL-7 protein is produced by a wide variety of cells in primary and secondary lymphoid tissues, including stromal epithelial cells of the thymus, bone marrow, and intestines (1, 2, 5). Circulating IL-7 protein is limiting in healthy animals, but increases during lymphopenia (1, 6). IL-7 signals through a complex of the IL-7 Receptor alpha subunit (IL-7 R α , also known as CD127) with the common γ chain (γ_c) (1). The γ_c is also a subunit of the receptors for IL-2, -4, -9, -15, and -21 (1). IL-7 R α is expressed on double negative (CD4⁻CD8⁻) and CD4⁺ or CD8⁺ single positive naïve and memory T cells, but undergoes IL-7-mediated down-regulation and shedding during antigen-driven T cell proliferation, and is absent on regulatory T cells (1, 2, 6-11). IL-7 contributes to the maintenance of all naïve and memory T cells, mainly by promoting expression of the anti-apoptotic protein Bcl-2 (9-11). It is required for optimal T cell-dendritic cell interaction (6). IL-7 is expressed early in B cell development prior to the appearance of surface IgM (1, 5, 9). In mouse, IL-7 activation of IL-7 R α is critical for both T cell and B cell lineage development, while in humans, it is required for T cell but not for B cell development (4, 9, 12, 13). However, IL-7 functions in both mouse and human pro-B cells to suppress premature Ig light chain recombination during proliferative growth (14, 15).

References:

1. Sasson, S.C. *et al.* (2006) *Curr. Drug Targets* **7**:1571.
2. Barata, J.T. *et al.* (2006) *Exp. Hematol.* **34**:1133.
3. Goodwin, R.G. *et al.* (1990) *Proc. Natl. Acad. Sci. USA* **86**:302.
4. Namen, A.E. *et al.* (1988) *Nature* **333**:571.
5. Shalapour, S. *et al.* (2012) *PLoS ONE* **7**: e31939.
6. Saini, M. *et al.* (2009) *Blood* **113**:5793.
7. Park, J.H. *et al.* (2004) *Immunity* **21**:289.
8. Vranjkovic, A. *et al.* (2007) *Int. Immunol.* **19**:1329.
9. Sudo, T. *et al.* (1993) *Proc. Natl. Acad. Sci.* **90**:9125.
10. Seddon, B. *et al.* (2003) *Nat. Immunol.* **4**:680.
11. Schluns, K.S. *et al.* (2000) *Nat. Immunol.* **5**:426.
12. Peschon, J.J. *et al.* (1994) *J. Exp. Med.* **180**:1955.
13. Pribyl, J.A. and T.W. LeBien (1996) *Proc. Natl. Acad. Sci.* **93**:10348.
14. Johnson, K. *et al.* (2012) *J. Immunol.* **188**:6084.
15. Nodland, S.E. *et al.* (2011) *Blood* **118**:2116.