

DESCRIPTION

Source *E. coli*-derived
Ala21-Thr155, with an N-terminal Met
Accession # P05016

N-terminal Sequence Analysis Met

Predicted Molecular Mass 15.6 kDa

SPECIFICATIONS

Activity Measured in a cell proliferation assay using MO7e human megakaryocytic leukemic cells.
The ED₅₀ for this effect is typically 0.5-1.5 µg/mL.

Endotoxin Level <0.10 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 Sodium Acetate 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

Bovine Interleukin-2 (IL-2) is a 15 kDa, α-helical, single chain, potentially glycosylated polypeptide that has potent stimulatory activity for antigen-activated T cells (1 - 5). The molecule is synthesized as a 155 amino acid (aa) precursor that contains a 20 aa signal peptide plus a 135 aa mature segment that is possibly O-glycosylated (4, 5). The mature region has multiple α-helices and one intrachain disulfide bond. Mature bovine IL-2 is 64%, 60%, 49%, 50%, 72%, 63% and 67% to mature human, canine, mouse, rat, porcine, equine, and feline IL-2, respectively. Mammalian cells known to express IL-2 include CD4⁺ and CD8⁺ T cells, visceral smooth muscle cells, eosinophils, γδ T cells, B cells and dendritic cells. The receptor for IL-2 is complex and consists of three distinct subunits in varying combinations (6, 7). Two of these are ligand-binding and are termed IL-2 Rα and IL-2 Rβ. IL-2 Rα is 55 kDa and binds IL-2 with low affinity. IL-2 Rβ is 75 kDa and binds IL-2 with intermediate affinity. Signal transduction is performed by both IL-2 Rβ and a 64 kDa common gamma chain (γ_c). This signal transducing common gamma chain does not bind IL-2, but does heterodimerize with IL-2 Rβ to form a functional IL-2 receptor. The complex heterotrimeric α-β-γ_c receptor may arise from IL-2 binding to preformed Rα-Rβ complexes (8). Functionally, IL-2 is best known for its autocrine and paracrine activity on T cells. It drives resting T cells into active G1, inducing IL-2 and IL-2 Rα synthesis and cell proliferation (7). It also promotes Fas-induced death of naïve CD4⁺ T cells, while having minimal effect on activated CD4⁺ memory lymphocytes. Finally, IL-2 seems to play a central role in the expansion and maintenance of CD4⁺ CD25⁺ regulatory T cells. Thus, IL-2 may be a key cytokine in the natural suppression of autoimmunity (9, 10).

References:

1. Smith, K.A. (1992) *Curr. Opin. Immunol.* **4**:271.
2. Smith, K.A. (1988) *Science* **240**:1169.
3. Waldmann, T.A. *et al.* (2001) *Immunity* **14**:105.
4. Cerretti, D.P. *et al.* (1986) *Proc. Natl. Acad. Sci. USA* **83**:3223.
5. Reeves, R. *et al.* (1986) *Proc. Natl. Acad. Sci. USA* **83**:3228.
6. Ellery, J.M. and P.J. Nicholls (2002) *Cytokine Growth Factor Rev.* **13**:27.
7. Nelson, B.H. and D.M. Willerford (1998) *Adv. Immunol.* **70**:1.
8. Liparoto, S.F. *et al.* (2002) *Biochemistry* **41**:2543.
9. Jaleco, S. *et al.* (2003) *J. Immunol.* **171**:61.
10. Malek, T.R. (2003) *J. Leukoc. Biol.* **74**:961.