SANTA CRUZ BIOTECHNOLOGY, INC.

IL-7 (hBA-152): sc-4599

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Interleukin 7 (IL-7) was originally described as a factor capable of inducing *in vitro* proliferation of pre-B cells from marrow cultures. The IL-7 gene encodes a protein 177 amino acids in length, with a molecular weight of 17.5 kDa. IL-7 exerts its biological function through the IL-7 receptor which is expressed on pre-B cells, thymocytes and bone marrow-derived macrophages. The IL-7 receptor is composed of an IL-7 receptor-specific chain and the IL-2 receptor γ chain common to the IL-2, IL-4, IL-7, IL-9 and IL-15 receptors. IL-7 stimulation leads to the activation of Janus tyrosine kinase family members JAK1 and JAK3. Other studies have shown that in T cells, the IL-7 receptor-specific chain associates with the Src kinases family Lck and Fyn. IL-7 induces phosphorylation of insulin receptor substrate-1 (IRS-1) and insulin receptor substrate-2 (IRS-2), originally called 4PS.

REFERENCES

1. Whitlock, C.A. and Witte, O.N. 1982. Long-term culture of B lymphocytes and their precursors from murine bone marrow. Proc. Natl. Acad. Sci. USA 79: 3608-3612.
2. Goodwin, R.G., Lupton, S., Schmierer, A., Hjerrild, K.J., Jerzy, R., Clevenger, W., Gillis, S., Cosman, D., and Namen, A.E. 1989. Human interleukin 7: molecular cloning and growth factor activity on human and murine B-lineage cells. Proc. Natl. Acad. Sci. USA 86: 302-306.
3. Thomis, D.C., Gurniak, C.B., Tivol, E., Sharpe, A.H., and Berg, L.J. 1995. Defects in B lymphocyte maturation and T lymphocyte activation in mice lacking JAK3. Science 270: 794-797.
4. Tortolani, P.J., Lal, B.K., Riva, A., Johnston, J.A., Chen, Y.Q., Reaman, G.H., Beckwith, M., Longo, D., Ortaldo, J.R., and Bhatia, K., McGrath, I., Kehrl, J., Tuscano, J., McVicar, D.W., and O'Shea, J. 1995. Regulation of JAK3 expression and activation in human B cells and B cell malignancies. |J. Immunol. 155: 5220-5226.
5. Page, T.H., Lali, F.V., and Foxwell, B.M. 1995. Interleukin-7 activates p56Lck and p59Fyn, two tyrosine kinases associated with the p90 interleukin-7 receptor in primary human T cells. Euro. J. Immunol. 25: 2956-2960.
6. Johnston, J.A., Wang, L.M., Hanson, E.P., Sun, X.J., White, M.F., Oakes, S.A., Pierce, J.H., and O'Shea, J.J. 1995. Interleukins 2, 4, 7, and 15 stimulate tyrosine phosphorylation of insulin receptor substrates 1 and 2 in T cells. Potential role of JAK kinases. J. Biol. Chem.270: 28527-28530.
7. Lai, S.Y., Xu, W., Gaffen, S.L., Liu, K.D., Longmore, G.D., Greene, W.C., and Goldsmith, M.A. 1996. The molecular role of the common γ c subunit in signal transduction reveals functional asymmetry within multimeric cytokine receptor complexes. Proc. Natl. Acad. Sci. USA 93: 231-235.

SOURCE

IL-7 (hBA-152) is produced in *E. coli* as 17.4 kDa biologically active protein corresponding to 152 amino acids of IL-7 of human origin.

PRODUCT

IL-7 (hBA-152) is purified from bacterial lysates (>98%); supplied as 10 µg purified protein.

BIOLOGICAL ACTIVITY

IL-7 (hBA-152) is biologically active as determined by the dose-dependent stimulation of the proliferation of murine IXN/2B cells.

Expected ED_{50}: <0.5 ng/ml.

Specific Activity: Greater than 2 x 10^6 units/mg.

RECONSTITUTION

In order to avoid freeze/thaw damaging of the active protein, dilute protein when first used to desired working concentration. Either a sterile filtered standard buffer (such as 50mM TRIS or 1X PBS) or water can be used for the dilution. Store any thawed aliquot in refrigeration at 2° C to 8° C for up to four weeks, and any frozen aliquot at -20° C to -80° C for up to one year. It is recommended that frozen aliquots be given an amount of standard cryopreservative (such as Ethylene Glycol or Glycerol 5-20% v/v), and refrigerated samples be given an amount of carrier protein (such as heat inactivated FBS or BSA to 0.1% v/v) or non-ionic detergent (such as Triton X-100 or Tween 20 to 0.005% v/v), to aid stability during storage.

STORAGE

Store desiccated at -20° C; stable for one year from the date of shipment.

RESEARCH USE

For research use only, not for use in diagnostic procedures.

PROTOCOLS

See our web site at www.scbt.com or our catalog for detailed protocols and support products.