SANTA CRUZ BIOTECHNOLOGY, INC.

IL-1β (hBA-153): sc-4592

SANTA CRUZ BIOTECHNOLOGY

The Power to Question

BACKGROUND

Two forms of interleukin-1, designated IL-1α and IL-1β, have been described. Although encoded by distinct genes and exhibiting roughly only 25% sequence identity, IL-1α and IL-1β bind to the same receptor and seem to elicit similar biological responses. IL-1 production is generally thought to be associated with inflammation, but it has also been shown to be expressed during kidney development, thymocyte differentiation and cartilage degradation. IL-1 plays a critical role in the regulation of immune response and inflammation, acting as an activator of T and B lymphocytes and natural killer (NK) cells. In T cells, IL-1 stimulates the production of IL-2 and selectively inhibits IL-4 expression. IL-1 induces B cell proliferation and maturation, and immunoglobulin synthesis. NK cells require IL-1β for production of the anti- pathogen IFN-γ. IL-1 has also been implicated in several pathological conditions including rheumatoid arthritis, inflammatory bowel disease and atherosclerosis.

REFERENCES

1. Auron, P.E., Webb, A.C., Rosenwasser, L.J., Mucci, S.F., Rich, A., Wolff, S.M. and Dinarello, C.A. 1985. Nucleotide sequence of human monocyte interleukin-1 precursor cDNA. Proc. Natl. Acad. Sci. USA 81: 7907-7911.
2. March, C.J., Mosley, B., Larsen, A., Cerretti, D.P., Braedt, G., Price, V., Gillis, S., Henney, C.S., Kronheim, S.R. and Grabstein, K. 1985. Cloning, sequence and expression of two distinct human interleukin-1 complementary DNAs. Nature 315: 641-647.
3. Dinarello, C.A. 1991. Interleukin-1 and interleukin-1 antagonism. Blood 77: 1627-1652.
4. Sadouk, M.B., Pelletier, J.P., Tardif, G., Kiansa, K., Cloutier, J.M. and Martel-Pelletier, J. 1995. Human synovial fibroblasts coexpress IL-1 receptor type I and type II mRNA. The increased level of the IL-1 receptor in osteoarthritic cells is related to an increased level of the type I receptor. Lab. Invest. 73: 347-355.
5. Lonnemann, G., Shapiro, L., Engler-Blum, G., Müller, G.A., Koch, K.M. and Dinarello, C.A. 1995. Cytokines in human renal interstitial fibrosis. I. Interleukin-1 is a paracrine growth factor for cultured fibrosis-derived kidney fibroblasts. Kidney Int. 47: 837-844.
6. Zúñiga-Pflücker, J.C., Di, J. and Lenardo, M.J. 1995. Requirement for TNF-α and IL-1α in fetal thymocyte commitment and differentiation. Science 268: 1906-1909.
7. Sandborg, C.I., Imfeld, K.L., Zaldivar, F., Wang, Z., Buckingham, B.A. and Berman, M.A. 1995. IL-4 expression in human T cells is selectively inhibited by IL-1α and IL-1β. J. Immunol. 155: 5206-5212.
8. Leung, L.Y., Tian, D., Brangwynne, C.P., Weitz, D.A. and Tschumperlin, D.J. 2007. A new microrheometric approach reveals individual and cooperative roles for TGFβ1 and IL-1β in fibroblast-mediated stiffening of collagen gels. FASEB J. 21: 2064-2073.
9. Vergoten, G. and Zanetta, J.P. 2007. Structural differences between the putative carbohydrate-recognition domains of human IL-1α, IL-1β and IL-1 receptor antagonist obtained by in silico modeling. Glycoconj. J. 24: 183-193.

CHROMOSOMAL LOCATION

Genetic locus: IL1B (human) mapping to 2q14; Il1b (mouse) mapping to 2 F.

SOURCE

IL-1β (hBA-153) is produced in *E. coli* as 44 kDa biologically active, GST-tagged fusion protein corresponding to 153 amino acids of IL-1β of human origin.

PRODUCT

IL-1β (hBA-153) is purified from bacterial lysates (>98%); supplied as 50 µg purified protein.

Biological Activity

IL-1β (hBA-153) is biologically active as determined by the dose-dependent stimulation of murine D10S cells.

Expected ED_{50}: <0.001 ng/ml.

Specific Activity: Greater than 1 x 10^9 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 cryo-preservative (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.

SELECT PRODUCT CITATIONS

1. Mey, J., Schrage, K., Wessels, I. and Vollpracht-Crijns, I. 2007. Effects of inflammatory cytokines IL-1β, IL-6, and TNFα on the intracellular localization of retinoid receptors in Schwann cells. Glia 55: 152-164.
2. Samaddar, S. and Koneri, R. 2019. Polyphenols of marine red macroalga *Symphyocladia latiuscula* ameliorate diabetic peripheral neuropathy in experimental animals. Heliyon 5: e01781.

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 for detailed protocols and support products.