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InnoCyto Inc.

15375 Barranca Pkwy, Suite I-103
Irvine, CA 92618
Email: info@innocyto.com
Phone: 1-949-418-7543

Recombinant Human IL-1β Protein

Catalog Number:	631301, 631302
Size:	20 µg, 100 µg
Target Name:	IL-1b, Catabolin, interleukin-1 beta, preinterleukin 1 beta, pro-interleukin-1-beta
Regulatory Status:	RUO

PRODUCT DETAILS

Application:	Bioassay
Format:	Lyophilized from sterile PBS, pH 7.4.
Expression Host:	E.coli
Species:	Human
accession number:	NP_000567.1
Sources:	A DNA sequence encoding the mature form of human IL1β (NP_000567.1) (Ala 117-Ser 269) was expressed with a N-terminal Met.
Molecular Weight:	The recombinant human IL1β consisting of 154 amino acids migrates with an apparent molecular mass of 17 kDa as estimated in SDS-PAGE under reducing conditions.
Affinity Tag:	None
Purity:	≥ 95 % as determined by SDS-PAGE. ≥ 95 % as determined by SEC-HPLC.
Endotoxin level:	
Protein Concentration:	Lyophilized
Storage and Handling:	Proteins are stable for up to twelve months from date of receipt at -20℃ to -80℃. Store it under sterile conditions at -20℃ to -80℃. It is recommended that the protein be aliquoted for optimal storage. Avoid repeated freeze-thaw cycles.

BACKGROUND INFORMATION

Human interleukin-1 beta (IL-1β) is a key proinflammatory cytokine that coordinates innate immune responses, including fever induction, leukocyte recruitment, and activation of endothelial and stromal cells. It is mainly produced by monocytes, macrophages, and dendritic cells following recognition of pathogens or tissue damage through pattern recognition receptors. IL-1β is synthesized as an inactive precursor, pro-IL-1β, and requires cleavage by caspase-1 within the inflammasome complex to generate its mature, biologically active form, making inflammasome activation a central control point in its regulation.

Structurally, IL-1β belongs to the IL-1 cytokine family and adopts a β-trefoil fold composed of a compact beta-sandwich-like architecture. It is a non-glycosylated, soluble protein that functions primarily as a monomer. IL-1β signals through the interleukin-1 receptor type I (IL-1R1), which forms a functional receptor complex with the IL-1 receptor accessory protein (IL-1RAcP). IL-1β is the principal ligand for this receptor system, and ligand binding initiates MyD88-dependent signaling cascades that activate NF-κB and MAPK pathways, driving expression of inflammatory genes.

Dysregulated IL-1β activity is strongly associated with inflammatory and autoimmune diseases such as rheumatoid arthritis, gout, inflammatory bowel disease, atherosclerosis, and autoinflammatory syndromes. Chronic overproduction contributes to sustained inflammation and tissue injury, whereas insufficient activation may impair host defense against infection. Therapeutically, IL-1β is targeted by biologics including monoclonal antibodies and receptor antagonists such as IL-1 receptor blockers. These therapies are used clinically to reduce excessive inflammation in autoinflammatory and rheumatologic conditions and are being explored in metabolic and cardiovascular diseases.

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