Datasheet for ABIN411293

IL-1 beta ELISA Kit

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Overview

Quantity:	96 tests
Target:	IL-1 beta (IL1B)
Binding Specificity:	AA 117-269
Reactivity:	Human
Method Type:	Sandwich ELISA
Detection Range:	3.9-250 pg/mL
Minimum Detection Limit:	3.9 pg/mL
Application:	ELISA

Product Details

Purpose:	Sandwich High Sensitivity ELISA kit for Quantitative Detection of Human IL-1 beta
Brand:	PicoKine™
Sample Type:	Cell Culture Supernatant, Serum, Plasma (heparin), Plasma (EDTA), Plasma (citrate)
Analytical Method:	Quantitative
Detection Method:	Colorimetric
Immunogen:	Expression system for standard: E.coli Immunogen sequence: A117-S269
Specificity:	Expression system for standard: E.coli,A117-S269
Cross-Reactivity (Details):	There is no detectable cross-reactivity with other relevant proteins.
Sensitivity:	<0.15pg/mL

Product Details

Material not included:	Microplate reader in standard size. Automated plate washer. Adjustable pipettes and pipette tips. Multichannel pipettes are recommended in the condition of large amount of samples in the detection. Clean tubes and Eppendorf tubes. Washing buffer (neutral PBS or TBS). Preparation of 0.01M TBS: Add 1.2g Tris, 8.5g Nacl

Target Details

Target:	IL-1 beta (IL1B)
Alternative Name:	IL1B (IL1B Products)
Background:	Protein Function: Produced by activated macrophages, IL-1 stimulates thymocyte proliferation by inducing IL-2 release, B-cell maturation and proliferation, and fibroblast growth factor activity. IL-1 proteins are involved in the inflammatory response, being identified as endogenous pyrogens, and are reported to stimulate the release of prostaglandin and collagenase from synovial cells. . Background: Interleukin-1beta(IL-1beta) is a potent stimulator of bone resorption whose gene is mapped to 2q14, and has been implicated in the pathogenesis of high bone turnover and osteoporosis. IL-1beta, a prominent microglia-derived cytokine, caused oligodendrocyte death in coculture with astrocytes and microglia, but not in pure culture of oligodendrocytes alone. It also can cause nuclear export of a specific NCOR corepressor complex, resulting in derepression of a specific subset of nuclear factor-kappa-B(NFKB)-regulated genes. Furthermore, Microenvironmental IL-1beta and, to a lesser extent, IL-1alpha are required for in vivo angiogenesis and invasiveness of different tumor cells. Additional, the cooperation of IL-1beta and PDGFB induces contractile-to-synthetic phenotype modulation of human aortic smooth muscle cells in culture. Moreover, the association with disease may be explained by the biologic properties of IL-1beta, which is an important proinflammatory cytokine and a powerful inhibitor of gastric acid secretion. Synonyms: Interleukin-1 beta,IL-1 beta,Catabolin,IL1B,IL1F2, Full Gene Name: Interleukin-1 beta Cellular Localisation: Secreted. The lack of a specific hydrophobic segment in the precursor sequence suggests that IL-1 is released by damaged cells or is secreted by a mechanism differing from that used for other secretory proteins.
Gene ID:	3553
UniProt:	P01584
Pathways:	NF-kappaB Signaling, Interferon-gamma Pathway, TLR Signaling, Negative Regulation of Hormone Secretion, Cellular Response to Molecule of Bacterial Origin, Carbohydrate

Target Details

Homeostasis, Glycosaminoglycan Metabolic Process, Myometrial Relaxation and Contraction, Regulation of Leukocyte Mediated Immunity, Positive Regulation of Immune Effector Process, Autophagy, Cancer Immune Checkpoints, Inflammasome

Application Details

Application Notes:	Before using Kit, spin tubes and bring down all components to bottom of tube. Duplicate well assay was recommended for both standard and sample testing.
Comment:	Sequence similarities: Belongs to the IL-1 family.
Plate:	Pre-coated
Protocol:	human IL-1 beta ELISA Kit was based on standard sandwich enzyme-linked immune-sorbent assay technology. A monoclonal antibody from mouse specific for IL-1 beta has been precoated onto 96-well plates. Standards (E.coli,A117-S269) and test samples are added to the wells, a biotinylated detection polyclonal antibody from goat specific for IL-1 beta is added subsequently and then followed by washing with PBS or TBS buffer. Avidin-Biotin-Peroxidase Complex was added and unbound conjugates were washed away with PBS or TBS buffer. HRP substrate TMB was used to visualize HRP enzymatic reaction. TMB was catalyzed by HRP to produce a blue color product that changed into yellow after adding acidic stop solution. The density of yellow is proportional to the human IL-1 beta amount of sample captured in plate.
Assay Procedure:	Aliquot 0.1 mL per well of the 250pg/mL, 125pg/mL, 62.5pg/mL, 31.2pg/mL, 16.5pg/mL, 7.8pg/mL, 3.9pg/mL human IL-1 betastandard solutions into the precoated 96-well plate. Add 0.1 mL of the sample diluent buffer into the control well (Zero well). Add 0.1 mL of each properly diluted sample of human cell culture supernatants, serum or plasma(heparin, EDTA, citrate) to each empty well. See "Sample Dilution Guideline" above for details. We recommend that each human IL-1 betastandard solution and each sample is measured in duplicate.
Assay Precision:	• Sample 1: n=16, Mean(pg/ml): 19, Standard deviation: 1.0, CV(%): 5.3 • Sample 2: n=16, Mean(pg/ml): 41.2, Standard deviation: 2.6, CV(%): 6.3 • Sample 3: n=16, Mean(pg/ml): 116, Standard deviation: 6.5, CV(%): 5.6, • Sample 1: n=24, Mean(pg/ml): 27.5, Standard deviation: 1.6, CV(%): 5.8 • Sample 2: n=24, Mean(pg/ml): 61.3, Standard deviation: 4.1, CV(%): 6.7 • Sample 3: n=24, Mean(pg/ml): 179.1, Standard deviation: 12.7, CV(%): 7.1
Restrictions:	For Research Use only

Handling

Handling Advice:	Avoid multiple freeze-thaw cycles.
Storage:	-20 °C,4 °C
Storage Comment:	Store at 4°C for 6 months, at -20°C for 12 months. Avoid multiple freeze-thaw cycles
Expiry Date:	12 months

Publications

Product cited in:

Gao, Huang, Zhao, Hu, Li, Guo, Zhao, Lu: "LL202 protects against dextran sulfate sodium-induced experimental colitis in mice by inhibiting MAPK/AP-1 signaling." in: **Oncotarget**, Vol. 7, Issue 39, pp. 63981-63994, (2018) (PubMed).

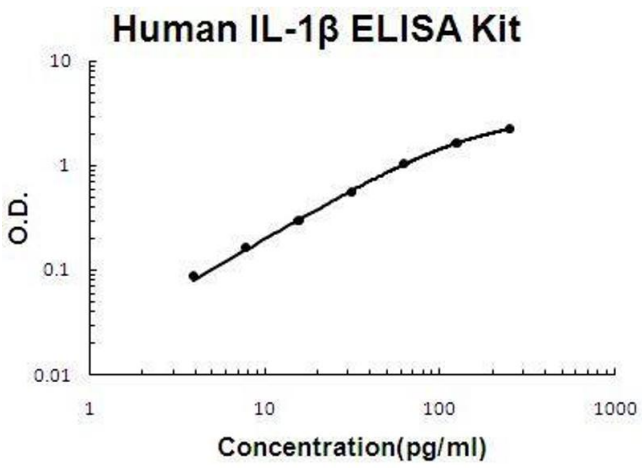
Sun, Chen, Wang, Wan, Zhang, Zhang, Lin, Zhang: "Salusin-β Is Involved in Diabetes Mellitus-Induced Endothelial Dysfunction via Degradation of Peroxisome Proliferator-Activated Receptor Gamma." in: **Oxidative medicine and cellular longevity**, Vol. 2017, pp. 6905217, (2018) (PubMed).

Wang, Qin, Wang, Chen, Lang, Zheng, Gao, Chen, Zhong, Mu, Wu, Zhang, Zhao, Zhong: " Pyroptosis induced by enterovirus 71 and coxsackievirus B3 infection affects viral replication and host response." in: **Scientific reports**, Vol. 8, Issue 1, pp. 2887, (2018) (PubMed).

Wan, Yuan, Liu, Xue: "miRNA-223-3p regulates NLRP3 to promote apoptosis and inhibit proliferation of hep3B cells." in: **Experimental and therapeutic medicine**, Vol. 15, Issue 3, pp. 2429-2435, (2018) (PubMed).

Wang, Xie, Yang, Zhang, Wang, Wu, Shen, Xie: "Sulfated Cyclocarya paliurus polysaccharides markedly attenuates inflammation and oxidative damage in lipopolysaccharide-treated macrophage cells and mice." in: **Scientific reports**, Vol. 7, pp. 40402, (2017) (PubMed).

There are more publications referencing this product on: Product page



ELISA

Image 1. Human IL-1 beta PicoKine ELISA Kit standard curve

Successfully validated (ELISA (ELISA))

by Kinderklinik, Universitätsklinikum, TU Dresden

Report Number: 101868

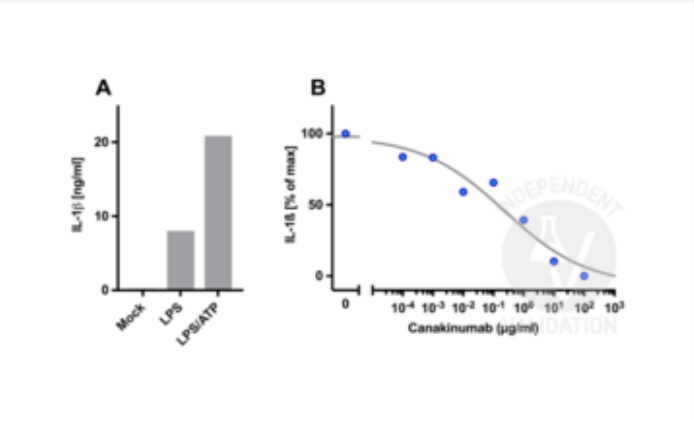
Date: May 16 2018

Target:	IL1B
Lot Number:	1141380914
Method validated:	ELISA (ELISA)
Positive Control:	Plasma from LPS stimulated human whole blood; Recombinant human IL-1B with increasing concentrations of canakinumab.
Negative Control:	Performed following the instructions provided by the manufacturer.
Notes:	Passed. ABIN411293 detects IL-1B in plasma from human whole blood. In the presence of increasing concentrations of canakinumab, false low IL-1B concentrations were detected, limiting the kit's practicability.
Protocol:	• Collect blood from volunteers in hirudin coated tubes (Sarstedt, 04.1944.001). • Distribute blood samples on 96 well plates using 140µl per well. • Add ultra-pure LPS (Invivogen, tlrl-3pelps) to each well to a concentration of 1µg/ml to primer samples for NLRP3 assays. • Incubate plates on a shaker (450rpm) in a humidified incubator for 5.5h at 37°C and 5% CO_2. • For NLRP3 inflammasome activation, add ATP (Invivogen, tlrl-atpl) to each well to a concentration of 1mM. • Incubate plates on a shaker (450rpm) in a humidified incubator for 30min at 37°C and 5% CO_2. • Add 100µl PBS to each well. • Centrifuge plates for 5min at 1200rpm at RT and freeze the supernatant from each well at -80°C. • For analysis of canakinumab interference with ABIN411293, dilute recombinant IL-1B (BD, 558457) to 800pg/ml in RPMI1640 and incubate it with increasing doses of canakinumab (0µg/ml, 0.0001µg/ml, 0.001µg/ml, 0.01µg/ml, 0.1µg/ml, 1µg/ml, 10µg/ml, 100µg/ml) for 2h at RT. • Perform measurements according to the manufacturer's protocol. • Analyze standards and samples in duplicate. Use assay buffer as blank and subtract the mean blank was subtracted from all raw data reads. • Use a five parameter logisitic curve to calculate the standard curve.
Experimental Notes:	• The aim was to analyze the ability of ABIN411293 to detect IL-1B in plasma from stimulated

human whole blood and in the presence of the therapeutic IL-1B antibody canakinumab.

- Analysis of stimulated human whole blood showed the expected results, therefore ABIN411293 is suitable to detect IL-1B from plasma of stimulated human whole blood. Of note, increasing doses of canakinumab seem to interfere with the binding of the ELISAs antibodies leading to detection of false low IL-1B concentrations. Therefore, the ELISA may not be used to analyze serum or plasma from patients receiving therapeutic canakinumab.

Image for Validation report #101868



Validation image no. 1 for Interleukin 1, beta (IL1B) ELISA Kit (ABIN411293)

A. Human anticoagulated whole blood was stimulated with LPS or LPS and ATP. Subsequently, IL-1B plasma concentration was analyzed using ABIN411293. B. Recombinant human IL-1B was incubated for 2h with increasing doses of canakinumab. Subsequently, IL-1b concentration was analyzed using ABIN411293.