QUANTITATIVE DETERMINATION OF HUMAN IL-1 BETA

NEW PRODUCT

Human Interleukin-1 beta ELISA

- Sensitivity (0.4 pg/ml)
- Very good analytical characteristics
- Validated for human serum, plasma (EDTA, citrate, heparin) and saliva samples

CYTOKINES AND CHEMOKINES AND RELATED MOLECULES

IMMUNE RESPONSE, INFECTION AND INFLAMMATION

ONCOLOGY

SEPSIS

BioVendor
Research
and Diagnostic Products

HUMAN INTERLEUKIN-1 BETA ELISA

Introduction

IL-1 Beta, a polypeptide cytokine, represents one of the most important mediators of inflammation and host responses to infections [1].

Even low concentrations of IL-1 Beta cause fever, hypotension and production of additional proinflammatory chemokines/cytokines, such as IL-6 [2]. IL-1 Beta exerts biological effects by binding the membrane-bound type I IL-1 receptor (IL-1R), which then associates with the IL-1-receptor accessory protein (IL-1RAcP) to form a complex capable of intracellular signaling [3]. This signalling controls expression of a number of inflammatory and catabolic genes [4].

Besides its favorable role in mediating host responses to microbial invasion, IL-1 Beta has also harmful effects [5]. IL-1 Beta can promote tumor invasiveness, tumor angiogenesis and metastasis [6]. IL-1 Beta also exacerbates damage during chronic diseases and acute tissue injury [7]. Overexpression of IL-1 Beta was observed in the pathophysiological changes that occur during different diseases, such as rheumatoid arthritis, neuropathic pain, inflammatory bowel disease, osteoarthritis, multiple sclerosis and neurodegenerative diseases [8, 9, 10].

It was observed that IL-1 Beta impairs insulin-producing Beta-cell function [11]. Macrophage-derived IL-1 Beta production in insulin-sensitive organs leads to progression of inflammation and induction of insulin resistance in obesity [12].

Regarding other biofluids, it was found that IL-1 Beta is one of the most abundant cytokine in saliva. It was observed that salivary level of IL-1 Beta was higher in the patients with periodontitis compared to periodontally healthy subjects [13, 14].

QUANTITATIVE DETERMINATION OF HUMAN IL-1 BETA

BioVendor Human Interleukin-1 beta ELISA RD194559200R

Intended use

The RD194559200R Human Interleukin-1 beta ELISA is a sandwich enzyme immunoassay for the quantitative measurement of native human Interleukin-1 Beta Protein.

- **It is intended for research use only**
- The total assay time is less than 4 hours
- The kit measures total human IL-1 Beta in serum, plasma (EDTA, citrate, heparin) and saliva
- Assay format is 96 wells
- Standard is purified E.coli protein
- Components of the kit are provided ready to use, concentrated or lyophilized

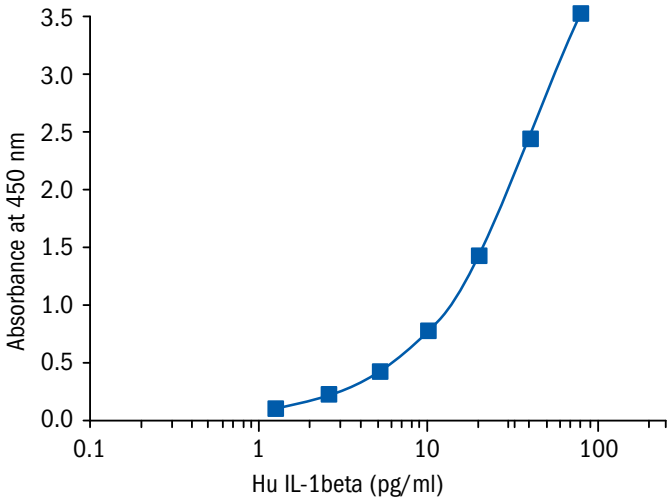
Clinical application

- Cytokines and chemokines and related molecules
- Immune Response, Infection and Inflammation
- Oncology
- Sepsis

Test principle

In the BioVendor Human Interleukin-1 Beta ELISA, standards and samples are incubated in a microtitrate plate wells pre-coated with monoclonal anti-human IL-1 Beta antibody. After 60 minutes incubation and a washing, biotin-labelled monoclonal anti-human IL-1 Beta antibody is added and incubated with captured IL-1 Beta for 60 minutes. After another washing, the streptavidin-HRP conjugate is added. After 60 minutes incubation and the last washing step, the remaining conjugate is allowed to react with the substrate solution (TMB). The reaction is stopped by addition of acidic solution and absorbance of the resulting yellow product is measured. The absorbance is proportional to the concentration IL-1 Beta. A standard curve is constructed by plotting absorbance values against concentrations of IL-1 Beta standards, and concentrations of unknown samples are determined using this standard curve.

HUMAN INTERLEUKIN-1 BETA ELISA CAT. NO.: RD194559200R	
Assay format	Sandwich ELISA, Biotin-labelled antibody, 96 wells/kit
Samples	Serum, Plasma (EDTA, citrate, heparin) and Saliva
Standards	1.25 to 80 pg/ml
Limit of detection	0.4 pg/ml



Precision

Intra-assay (Within-Run) (n=8)

Sample	Mean (pg/ml)	SD (pg/ml)	CV (%)
Saliva 1	168.77	4.5	2.7
Saliva 2	45.67	1.9	4.2

Inter-assay (Run-to-Run) (n=7)

Sample	Mean (pg/ml)	SD (pg/ml)	CV (%)
Serum 1	54.93	2.8	5.2
Serum 2	101.57	6.8	6.7

Spiking recovery

Serum samples were spiked with different amounts of human IL-1 Beta and assayed.

Sample	Observed (pg/ml)	Expected (pg/ml)	Recovery O/E (%)
Serum 1	2.36	-	-
	8.09	9.86	82.0
	14.26	17.36	82.1
	26.77	32.36	82.7
Serum 2	3.24	-	-
	9.44	10.74	87.9
	14.87	18.24	81.5
	26.92	33.24	81.0
Saliva 1	139.59	-	-
	200.98	189.59	106.0
	248.48	239.59	103.7
	371.43	339.59	109.4
Saliva 2	74.18	-	-
	128.06	124.18	103.1
	164.94	174.18	94.7
	287.52	274.18	104.9

Linearity

Serum, plasma and urine samples were serially diluted with Dilution Buffer and assayed.

Sample	Dilution	Observed (pg/ml)	Expected (pg/ml)	Recovery O/E (%)
Serum 1	-	79.66	-	-
	2x	40.05	39.83	100.6
	4x	20.34	19.91	102.1
	8x	9.43	9.96	94.7
Serum 2	-	56.22	-	-
	2x	28.56	28.11	101.6
	4x	14.99	14.04	106.7
	8x	7.64	7.03	108.7
Saliva 1	-	1080.81	-	-
	2x	506.27	540.41	93.7
	4x	264.56	270.20	97.9
	8x	140.78	135.10	104.2
Saliva 2	-	663.22	-	-
	2x	307.99	331.61	92.9
	4x	153.41	165.81	92.5
	8x	80.40	82.90	97.0

QUANTITATIVE DETERMINATION OF HUMAN IL-1 BETA

Summary of protocol

- Reconstitute Master Standard and prepare set of Standards
- Dilute samples (serum 3x, plasma 3x, saliva 20x)
- Add 100 µl Standards and samples
- Incubate at RT for 1 hour/300 rpm
- Wash plate 3 times
- Add 100 µl Biotin Labelled Antibody solution
- Incubate at RT for 1 hour/300 rpm
- Wash plate 3 times
- Add 100 µl Streptavidin – HRP Conjugate
- Incubate at RT for 1 hour/300 rpm
- Wash plate 3 times
- Add 100 µl Substrate Solution
- Incubate at RT for 10 min
- Add 100 µl Stop Solution
- Read absorbance and calculate results

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