

A SANDWICH ENZYME IMMUNOASSAY FOR THE QUANTITATIVE MEASUREMENT OF HUMAN CTRP1 PROTEIN

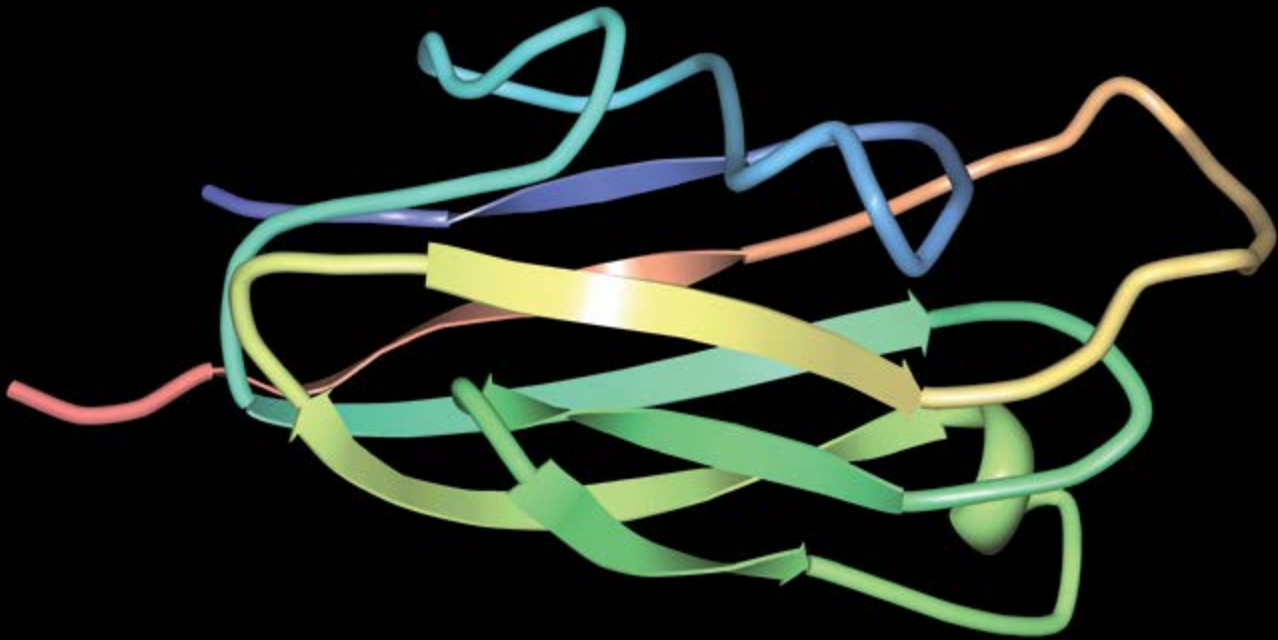
Human CTRP1 ELISA

BioVendor Research and Diagnostic Products releases its new CTRP1 ELISA. The CTRP1 ELISA has been optimized and validated for the quantitative determination of human CTRP1 in serum and plasma-citrate.



**ENERGY METABOLISM AND
BODY WEIGHT REGULATION**

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Introduction

CTRP1 (C1q/TNF-related protein-1) is a 32 kD, 281 amino acid secretory protein that belongs to the family of adiponectin paralogs/C1q/TNF- α molecular superfamily, and possesses a collagenous structure and a complement factor C1q globular domain.

CTRP-1 is expressed at high levels in adipose tissues of db/db mice and obese Zucker diabetic fatty (*fa/fa*) rats, and CTRP1 expression is induced by proinflammatory cytokines, including TNF- α and IL-1 β .

Circulating levels of CTRP1 increase ~2-fold in adiponectin-null mice, and administration of the anti-diabetic drug rosiglitazone (a PPAR- γ agonist) upregulates expression of CTRP1 mRNA in mouse adipose tissue.

CTRP1 is reported to inhibit collagen-induced platelet aggregation by specifically blocking binding of von Willebrand factor to collagen.

Recombinant CTRP1 lowers blood glucose in mice, and overexpressing CTRP1 in transgenic mice improved insulin sensitivity and decreased high-fat diet-induced weight gain resulting from enhanced fatty acid oxidation and energy expenditure, effects mediated by AMP-activated protein kinase (AMPK). CTRP1 is a novel regulator of fatty acid metabolism.

CTRP1 is expressed in the zona glomerulosa of the adrenal cortex, stimulating aldosterone production through induction of CYP11B2 gene expression. Therefore, CTRP1 could be a molecular link between obesity and hypertension.

In patients with metabolic syndrome, CTRP1 correlated with glucose, HbA1c and Body Mass Index. CTRP1 level was significantly higher in subjects with metabolic syndrome compared to healthy subjects.

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BioVendor Human CTRP1 ELISA (RD191153100R)

Intended use

The RD191153100R Human Human CTRP1 ELISA is a sandwich enzyme immunoassay for the quantitative measurement of human CTRP1.

- The total assay time is less than 3 hours
- The kit measures CTRP1 in serum and plasma citrate
- Assay format is 96 wells
- Quality Controls are human serum based
- Standard is recombinant protein
- Components of the kit are provided ready to use, concentrated or lyophilized

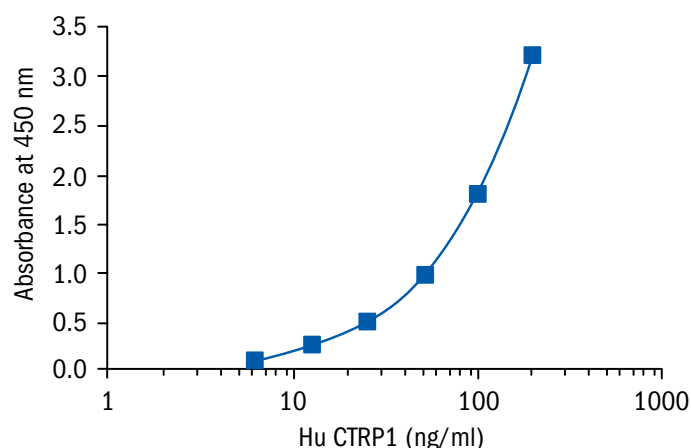
Clinical application

- Energy metabolism and body weight regulation
- Metabolic syndrome

Test principle

In the BioVendor Human CTRP1 ELISA, the standards, quality controls and samples are incubated in microtiter wells pre-coated with polyclonal anti-human CTRP1 antibody. After 60 minutes incubation and washing, polyclonal anti-human CTRP1 antibody, conjugated with horseradish peroxidase (HRP) is added to the wells and incubated for 60 minutes with captured CTRP1. Following another washing step, the remaining HRP 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 of CTRP1. A standard curve is constructed by plotting absorbance values against concentrations of standards, and concentrations of unknown samples are determined using this standard curve.

HUMAN CTRP1 ELISA CAT. NO.: RD191153100R	
Assay format	Sandwich ELISA, HRP-labelled antibody, 96 wells/kit
Samples	Serum, Plasma-citrate
Controls	QC-Low, QC-High
Standards	3.13-100 ng/ml
Limit of detection	Analytical Limit of Detection is calculated from the real human CTRP1 values in wells and is 0.016 ng/ml.



Precision

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

Sample	Mean (ng/ml)	SD (ng/ml)	CV (%)
1	148.9	3.8	2.6
2	449.0	12.2	2.7

Inter-assay (Run-to-Run) (n=5)

Sample	Mean (ng/ml)	SD (ng/ml)	CV (%)
1	98.9	9.0	9.1
2	416.8	32.8	7.9

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Spiking recovery

Serum samples were spiked with different amounts of human CTRP1 and assayed.

Sample	Observed (ng/ml)	Expected (ng/ml)	Recovery O/E (%)
1	260.4	-	-
	353.5	350.4	100.9
	411.4	440.4	93.4
	663.5	620.4	106.9
2	250.5	-	-
	312.3	340.5	91.7
	365.9	430.5	85.0
	559.3	610.5	91.6

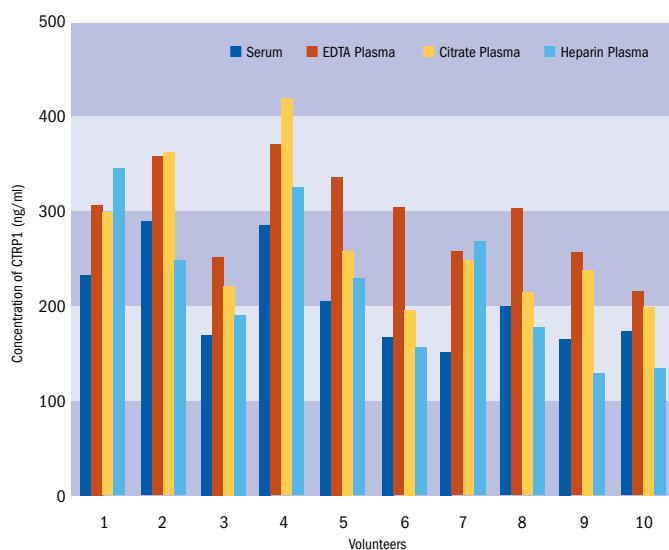
Linearity

Serum samples were serially diluted with Dilution Buffer and assayed.

Sample	Dilution	Observed (ng/ml)	Expected (ng/ml)	Recovery O/E (%)
1	-	955.5	-	-
	2×	473.2	477.8	99.1
	4×	236.8	238.9	99.1
	8×	120.3	119.4	100.7
2	-	1649.6	-	-
	2×	794.0	824.8	96.3
	4×	401.2	412.4	97.3
	8×	224.4	206.2	108.8

Effect of sample matrix

Heparin, citrate and EDTA plasmas were compared to respective serum samples from the same 10 individuals.



Summary of protocol

- Reconstitute QCs and Master Standard and prepare set of Standards
- Dilute samples 20×
- Add 100 μ l Standards, QCs and samples
- Incubate at RT for 1 hour/300 rpm
- Wash plate 3 times
- Add 100 μ l Conjugate Solution
- Incubate at RT for 1 hour/300 rpm
- Wash plate 3 times
- Add 100 μ l Substrate Solution
- Incubate at RT for 10 min
- Add 100 μ l Stop Solution
- Read absorbance and calculate results

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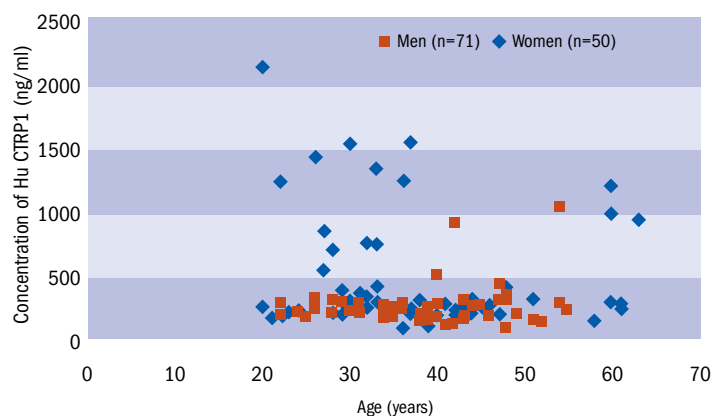
Preliminary Population and Clinical Data

The following results were obtained when serum from 121 unselected donors (50 women + 71 men), 18-84 years old were assayed with Biovondor Human CTRP1 ELISA kit in our laboratory. The presented data should be regarded only as guideline.

Age and sex dependent distribution of CTRP1

Sex	Age (years)	n	Mean CTRP1 (ng/ml)	SD CTRP1 (ng/ml)	Min. CTRP1 (ng/ml)	Max. CTRP1 (ng/ml)	Median. CTRP1 (ng/ml)
Men	18-49	62	416.4	413.0	87.4	2096.9	252.6
	50-94	9	537.5	360.1	148.8	1 172.2	312.2
Women	18-48	44	246.9	124.9	86.9	889.6	227.2
	53-84	6	334.4	313.6	132.2	1 026.9	215.7

Age and Sex Dependent Distribution of Hu CTRP1



Related products

- RD172153100 CTRP1 Human *E. coli*
- RAG002R CTRP3 Human ELISA
- RAG003R CTRP5 Human ELISA



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