

HUMAN LEPTIN ELISA KIT

FOR THE QUANTITATIVE DETERMINATION OF HUMAN LEPTIN CONCENTRATIONS IN CELL CULTURE SUPERNATES, SERUM, AND PLASMA



FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC PROCEDURES.

PURCHASE INFORMATION:

ELISA NAME	HUMAN LEPTIN ELISA
Catalog No.	SK00050-02
Lot No.	
Formulation	96 T
Standard range	31.2-2000 pg/mL
Sensitivity	15 pg/mL
Sample Volume	100 μ l
Dilution factor	10 (Optimal dilutions should be determined by each laboratory for each application)
Sample Type	Serum, EDTA Plasma, Cell Culture Supernates
Specificity	Human Leptin only
Intra-assay Precision	4-8%
Inter-assay Precision	8-12%
Storage	2°C-8°C

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INTRODUCTION

Human LEPTIN immunoassay is a 3.5 - 4.5 hour solid phase ELISA designed to measure human LEPTIN in cell culture supernates, serum and plasma. It contains recombinant human LEPTIN and antibodies raised against this protein. It has been shown to accurately quantify recombinant human LEPTIN. Results obtained with naturally occurring LEPTIN samples showed linear curves that were parallel to the standard curves obtained using the kit standards. These results indicate that the immunoassay kit can be used to determine relative mass values for natural human LEPTIN.

PRINCIPLE OF THE ASSAY

This assay employs the quantitative sandwich enzyme immunoassay technique. A monoclonal antibody specific for LEPTIN has been pre-coated onto a microplate. Standards and samples are pipetted into the wells and any LEPTIN present is bound by the immobilized antibody. After washing away any unbound substances, a biotinylated monoclonal antibody specific for LEPTIN is added to the wells. Following a wash to remove any unbound antibody-biotin reagent, HRP link Streptavidin is added to the wells. After washing away any unbound enzyme, a substrate solution is added to the wells and color develops in proportion to the amount of LEPTIN bound in the initial step. The color development is stopped and the intensity of the color is measured.

LIMITATIONS OF THE PROCEDURE

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_ The kit should not be used beyond the expiration date on the kit label.

_ Do not mix or substitute reagents with those from other lots or sources.

_ It is important that the Dilution Buffer selected for the standard curve be consistent with the samples being assayed.

_ If samples generate values higher than the highest standard, dilute the samples with Dilution Buffer and repeat the assay.

_ Any variation in standard diluent, operator, pipetting technique, washing technique, incubation time or temperature, and kit age can cause variation in binding.

_ This assay is designed to eliminate interference by soluble receptors, binding proteins, and other factors present in biological samples. Until all factors

have been tested in the immunoassay, the possibility of interference cannot be excluded.

_CENTRIFUGE VIALS BEFORE STARTING ELISA

MATERIALS PROVIDED

DESCRIPTION	CODE	QUANTITY
Leptin Microplate - 96 well polystyrene microplate (12 strips of 8 wells) coated with a mouse monoclonal antibody against LEPTIN.	050-02-01	1 plate
LEPTIN Standard – 2000 pg/vial of recombinant human LEPTIN in a buffered protein base with preservatives; lyophilized.	050-02-02	1 vial
Detection Antibody Concentrate – 105 µL/vial, 100-fold concentrated of biotinylated monoclonal antibody against LEPTIN with preservatives; lyophilized.	050-02-03	1 vial
Positive Control – one vial of recombinant human LEPTIN, lyophilized	050-02-04	1 vial
Streptavidin-HRP Conjugate - 60 µL/vial, 200-fold concentrated solution of Streptavidin conjugate to HRP with preservatives	SAHRP	1 vial
Dilution Buffer - 60mL of buffered protein based solution with preservatives	DB01	1 bottle
Wash Buffer - 50 mL of 10-fold concentrated buffered surfactant, with preservative.	WB01	1 bottle
TMB Substrate Solution - 11 mL of TMB substrate solution	TMB01	1 bottle
Stop Solution - 11 mL of 0.5M HCl	S-STOP	1 bottle
Plate Sealer	EAPS	1
Plastic Pouch	P01	1

STORAGE

Unopened Kit: Store at 2 - 8°C for up to 12 months. For longer storage, unopened Standard, Positive Control and Detection Antibody Concentrate should be stored at -20°C or -70°C. Do not use kit past expiration date.

Opened / Reconstituted Reagents: Reconstituted Standard and Detection Antibody Concentrate Solution SHOULD BE STORED at -20°C or -70°C for up to one month.

Streptavidin-HRP Conjugate 200-fold Concentrate and other components may be stored at 2 - 8°C for up to 12 months.

Microplate Wells: Return unused wells to the plastic pouch with the desiccant pack and seal along entire edge of zip-seal. Microplate may be stored for up to 6 months at 2 - 8°C after opening.

OTHER SUPPLIES REQUIRED

- Microplate reader capable of measuring absorbance at 450 nm, with the correction wavelength set at 540 nm or 570 nm.
- Microplate shaker (250-300rpm).
- Pipettes and pipette tips.
- Deionized or distilled water.
- Squirt bottle, manifold dispenser, or automated microplate washer.
- 100 mL and 500 mL graduated cylinders.

SAMPLE COLLECTION AND STORAGE

Cell Culture Supernates - Remove particulates by centrifugation and assay immediately or aliquot and store samples at ≤-20° C. Avoid repeated freeze-thaw cycles.

Serum - Use a serum separator tube (SST) and allow samples to clot for 30 minutes before centrifugation for 15 minutes at 1000 x g. Remove serum and assay immediately or aliquot and store samples at ≤ -20° C. Avoid repeated freeze-thaw cycles.

Plasma - Collect plasma using EDTA, heparin, or citrate as an anticoagulant. Centrifuge for 15 minutes at 1000 x g within 30 minutes of collection. Assay immediately or aliquot and store samples at ≤-20° C. Avoid repeated freeze-thaw cycles.

Note: Use Aprotinin (enzyme inhibitor) (Code No.: 00700-01-25) for ALL sample collection to prevent sample degradation. 0.5 TIU per ml of sample solution.

SAMPLE PREPARATION

Serum and plasma samples may need a 10-fold dilution. A suggested 10-fold dilution is 30 µL sample + 270 µL Dilution Buffer. **Optimal dilutions should be determined by each laboratory for each application.**

Use polypropylene test tubes.

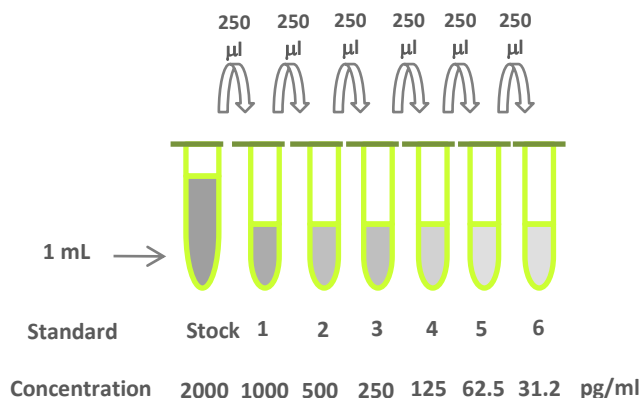
REAGENT PREPARATION

Bring all reagents to room temperature before use.

Wash Buffer - If crystals have formed in the concentrate, warm to room temperature and mix gently until the crystals have completely dissolved. Dilute 50 mL of Wash Buffer Concentrate into deionized or distilled water (450 mL) to prepare 500 mL of Wash Buffer.

LEPTIN Standard - Refer to vial label for reconstitution volume. Reconstitute the **LEPTIN** standard with 1.0 ml of Dilution Buffer. This reconstitution produces a stock solution of 2000 pg/mL. Allow the standard to sit for a minimum of 15 minutes with gentle agitation prior to making dilutions. Pipette 250 µL of Dilution Buffer into tubes #1 to #6. Use the stock solution to produce a dilution series (below). Mix each tube thoroughly before the next transfer. The 2000 pg/mL standard serves as the high standard. The Dilution Buffer serves as the zero standard (0 pg/mL).

Tube	Standard	Dilution Buffer	Concentration
stock	Powder	1000 µl	2000 pg/ml
# 1	250 µl of stock	250 µl	1000 pg/ml
# 2	250 µl of 1	250 µl	500 pg/ml
# 3	250 µl of 2	250 µl	250 pg/ml
# 4	250 µl of 3	250 µl	125 pg/ml
# 5	250 µl of 4	250 µl	62.5 pg/ml
# 6	250 µl of 5	250 µl	31.25 pg/ml



Detection Antibody Concentrate - Reconstitute the Detection Antibody Concentrate with 105 µL of Dilution Buffer to produce a 100-fold concentrated

stock solution. Pipette 10.395 mL of Dilution Buffer into a 15 mL centrifuge tube and transfer 105 μL of 100-fold concentrated stock solution to prepare working solution.

Streptavidin-HRP Conjugate - Pipette 11.94 mL of Dilution Buffer into a 15 mL centrifuge tube and transfer 60 μL of 200-fold concentrated stock solution to prepare working solution. **Note:** 1x working solution of Streptavidin-HRP conjugate should be used within a few days.

Positive Control - Reconstitute the positive control with 1.0 mL of Dilution Buffer to make positive control working solution. **Note:** Positive control working solution should be used within a few days.

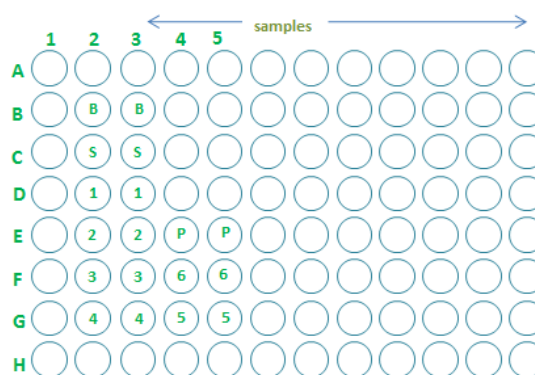
ASSAY PROCEDURE

Bring all reagents and samples to room temperature before use. It is recommended that blank, standards, positive control and samples be assayed in duplicates.

1. Prepare all reagents and working standards as directed in the previous sections.
2. Remove excess micro-plate strips from the plate frame, return them to the plastic pouch with the desiccant pack and seal.
3. Add 100 μL of Dilution Buffer to Blank wells (B2, B3).
4. Add 100 μL of Standard (C2, C3 to G2, G3 and F4, F5 to G4, G5), sample, or positive control (E4, E5) per well. Cover with plate sealer. Incubate for 2 hours on micro-plate shaker at room temperature. A plate layout is provided to record standards and samples assayed.
5. Aspirate each well and wash, repeating the process three times for a total of four washes. Wash by filling each well with 1x Wash Buffer (300 μL) using a squirt bottle, manifold dispenser, or autowasher. Complete removal of liquid at each step is essential to good performance. After the last wash, remove any remaining Wash Buffer by aspirating or decanting. Invert the plate and blot it against clean paper towels.
6. Add 100 μL of Detection Antibody working solution to each well. Cover with sealer. Incubate for 2 hours on micro-plate shaker at room temperature.
7. Repeat the aspiration/wash as in step 5.
8. Add 100 μL of Streptavidin-HRP Conjugate working solution to each well. Incubate for 60

minutes on micro-plate shaker at room temperature. **Protect from light.**

9. Repeat the aspiration/wash as in step 5.
10. Add 100 μL of Substrate Solution to each well. Incubate for 10-15 minutes at room temperature. **Protect from light.**
11. Add 100 μL of Stop Solution to each well. The color in the wells should change from blue to yellow. If the color in the wells is green, or if the color change does not appear uniform, gently tap the plate to ensure thorough mixing.
12. Determine the optical density of each well within 15 minutes, using a micro-plate reader set to 450 nm.



CALCULATION OF RESULTS

Average the duplicate readings for each standard, positive control, and sample and subtract the average zero standard optical density. Create a standard curve by reducing the data using computer software capable of generating a log-log curve fit. As an alternative, construct a standard curve by plotting the mean absorbance for each standard on the y-axis against the concentration on the x-axis and draw a best fit curve through the points on the graph. The data may be linearized by plotting the log of the LEPTIN concentrations versus the log of the O.D. and the best fit line can be determined by regression analysis. This procedure will produce an adequate but less precise fit of the data.

If samples have been diluted, the concentration read from the standard curve must be multiplied by the dilution factor.

CALIBRATION

This immunoassay is calibrated against a highly purified *E. Coli*-expressed recombinant human LEPTIN.

SENSITIVITY

Twenty-five assays were evaluated and the minimum detectable dose (MDD) of LEPTIN was 15 pg/mL.

TYPICAL DATA

This standard curve is provided for demonstration only. A standard curve should be generated for each set of samples assayed.

LEPTIN (PG/ML)	CORRECTED (450NM)
Blank	0 (0.066)
31.25	0.005
62.5	0.014
125	0.033
250	0.109
500	0.345
1000	1.080
2000	2.848

- **Lot No.:**
- **Positive Control : 150 - 300 pg/mL**

SPECIFICITY

This assay recognizes both natural and recombinant human LEPTIN. The factors listed below were prepared at 50 ng/mL in Dilution Buffer, and assayed for cross reactivity. Preparations of the following factors at 50 ng/mL in a mid-range rh LEPTIN control were assayed for interference. No significant cross-reactivity or interference was observed.

PROTEIN	CROSSREACTIVITY (%)
HUMAN LEPTIN	100
MOUSE LEPTIN	0
RAT LEPTIN	0
HUMAN SOLUBLE L LEPTIN RECEPTOR	0
HUMAN ADIPONECTIN	0
HUMAN RESISTIN	0
HUMAN SPARC	0

SUMMARY OF ASSAY PROCEDURE**PREPARE REAGENTS, SAMPLES AND STANDARDS**

Add 100 µl of standard, samples, positive control to each well. Incubate 2 hours on the plate shaker at RT.

Aspirate and wash 4 times.

Add 100 µl Detection Antibody working solution to each well. Incubate 2 hours on the plate shaker at RT.

Aspirate and wash 4 times.

Add 100 µl Streptavidin-HRP conjugate working solution to each well. Incubate 60 min on the plate shaker at RT. **Protect from light.**

Aspirate and wash 4 times.

Add 100 µl Substrate Solution to each well. Incubate 10-15 min on the plate shaker. **Protect from light.**

Add 100 µl Stop Solution to each well. Read 450nm within 15 min