



EAGLE
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Human Livin ELISA Kit

Catalog Number:

HLT31-K01 (1 x 96 wells)

For Research Use Only. Not for use in diagnostic procedures.

v. 1.0

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INTENDED USE

The Eagle Biosciences Human Livin ELISA Kit is intended for the quantitation of Human BIRC7 concentrations in cell culture supernates, serum and cell lysates. The Eagle Biosciences Human Livin ELISA Kit is for research use only and not for diagnostic or therapeutic procedures.

INTRODUCTION

BIRC7, also called KIAP or Livin, is a protein that in humans is encoded by the BIRC7 gene. This gene is mapped to 20q13.33. It encodes a member of the inhibitor of apoptosis protein (IAP) family, and contains a single copy of a baculovirus IAP repeat (BIR) as well as a RING-type zinc finger domain. The BIR domain is essential for inhibitory activity and interacts with caspases, while the RING finger domain sometimes enhances antiapoptotic activity but does not inhibit apoptosis alone. Elevated levels of the encoded protein may be associated with cancer progression and play a role in chemotherapy sensitivity. BIRC7 blocked apoptosis induced by BAX induction of cytochrome C release from mitochondria, and it also can block apoptosis induced by chemotherapeutic agents.

PRINCIPLE OF THE ASSAY

The Human BIRC7 Pre-Coated ELISA (Enzyme-Linked Immunosorbent Assay) kit is a solid phase immunoassay specially designed to measure Human BIRC7 with a 96-well strip plate that is pre-coated with antibody specific for BIRC7. The detection antibody is a biotinylated antibody specific for BIRC7. The capture antibody is monoclonal antibody from mouse, the detection antibody is polyclonal antibody from goat. The kit contains recombinant Human BIRC7 with immunogen: Expression system for standard: E.coli; Immunogen sequence: M1-S298. The kit is analytically validated with ready to use reagents.

To measure Human BIRC7, add standards and samples to the wells, then add the biotinylated detection antibody. Wash the wells with PBS or TBS buffer, and add Avidin-Biotin-Peroxidase Complex (ABC-HRP). Wash away the unbounded ABC-HRP with PBS or TBS buffer and add TMB. TMB is substrate to HRP and will be catalyzed to produce a blue color product, which changes into yellow after adding acidic stop solution. The density of the yellow product is linearly proportional to Human BIRC7 in the sample. Read the density of the yellow product in each well using a plate reader, and benchmark the sample wells' readings against the standard curve to determine the concentration of Human BIRC7 in the sample.

Reactive Species	Human
Size	96 wells/kit, with removable strips
Description	Sandwich High Sensitivity ELISA kit for Quantitative Detection of Human Livin. 96wells/kit, with removable strips.
Sensitivity	<20pg/ml *The sensitivity or the minimum detectable dose (MDD) is the lower limit of target protein that can be detected by the kit. It is determined by adding two standard deviations to the mean O.D. value of twenty (20) blank wells and calculating the corresponding concentration.
Detection Range	0.78ng/ml-50ng/ml
Storage Instructions	Store at 4°C for 6 months, at -20°C for 12 months. Avoid multiple freeze-thaw cycles (Shipped with wet ice.)



TECHNICAL DETAILS

Capture/Detection Antibodies

The capture antibody is monoclonal antibody from mouse, the detection antibody is polyclonal antibody from goat.

Specificity

Natural and recombinant Human BIRC7

Immunogen

Expression system for standard: E.coli; Immunogen sequence: M1-S298

Cross Reactivity

There is no detectable cross-reactivity with other relevant proteins.

NOTICE BEFORE APPLICATION

Please read the following instructions before starting the experiment.

1. To inspect the validity of experiment operation and the appropriateness of sample dilution proportion, pilot experiment using standards and a small number of samples is recommended.
2. Before using the Kit, spin tubes and bring down all components to the bottom of tubes.
3. Don't let 96-well plate dry, for dry plate will inactivate active components on plate.
4. Don't reuse tips and tubes to avoid cross contamination.
5. Avoid using the reagents from different batches together.

KIT COMPONENTS/MATERIALS PROVIDED

Description	Quantity	Volume
Anti-Human BIRC7 Precoated 96-well strip microplate	1	12 strips of 8 wells
Human BIRC7 Standard	2	100ng/tube
Human BIRC7 Biotinylated antibody (100x)	1	130 μ l
Avidin-Biotin-Peroxidase Complex (100x)	1	130 μ l
Sample Diluent	1	30ml
Antibody Diluent	1	12ml
Avidin-Biotin-Peroxidase Diluent	1	12ml
Color Developing Reagent (TMB)	1	10ml
Stop Solution	1	10ml
Wash Buffer Powder	1	Pack
Plate Sealers	4	Piece

REQUIRED MATERIALS THAT ARE NOT SUPPLIED

Microplate Reader capable of reading absorbance at 450nm.

Automated plate washer (optional)

Pipettes and pipette tips capable of precisely dispensing 0.5 μ l through 1 ml volumes of aqueous solutions.

Multichannel pipettes are recommended for large amount of samples.

Deionized or distilled water.

500ml graduated cylinders.

Test tubes for dilution.



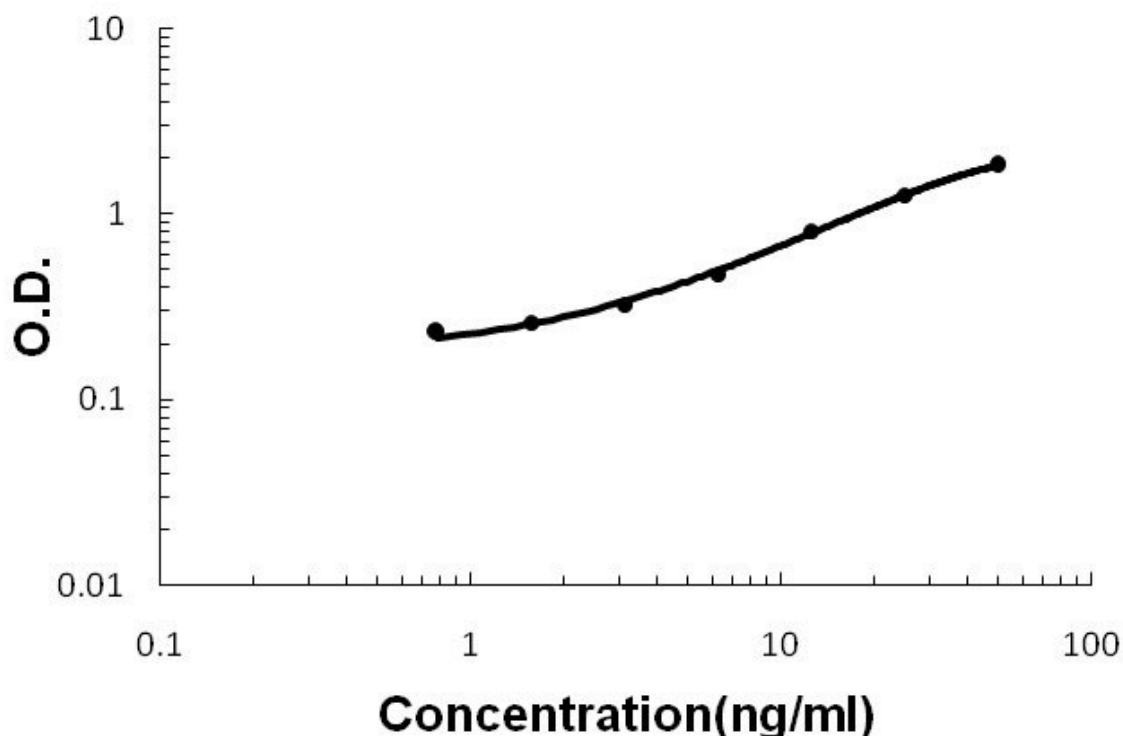
STANDARD CURVE EXAMPLE

Highest O.D. value might be higher or lower than in the example. The experiment result is statistically significant if the highest O.D. value is no less than 1.0.

Concentration (pg/ml)	0	0.78	1.56	3.12	6.25	12.5	25	50
O.D.	0.179	0.230	0.259	0.323	0.474	0.817	1.264	1.825

Human Livin ELISA Kit Standard Curve

Human Livin ELISA Kit



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

INTRA/INTER ASSAY VARIABILITY

Intra-Assay Precision (Precision within an assay): Three samples of known concentration were tested on one plate to assess intra-assay precision.

Inter-Assay Precision (Precision across assays): Three samples of known concentration were tested in separate assays to assess inter-assay precision.

Intra-Assay Precision

Sample	1	2	3
N	16	16	16
Mean(pg/ml)	1179	7213	23834
Standard Deviation	75.45	310.15	1430.04
CV (%)	6.4%	4.3%	6%



Inter-Assay Precision

Sample	1	2	3
N	24	24	24
Mean(pg/ml)	1141	6671	22267
Standard Deviation	76.44	353.56	1625.49
CV (%)	6.7%	5.3%	7.3%

REPRODUCIBILITY

To assay reproducibility, three samples with differing target protein concentrations were assayed using four different lots.

Lots	Lot1 (pg/ml)	Lot2 (pg/ml)	Lot3 (pg/ml)	Lot4 (pg/ml)	Mean (pg/ml)	Standard Deviation	CV (%)
Sample 1	1179	1307	1210	1282	1244	51.94	4.1%
Sample 2	7213	6992	7670	6636	7127	374.68	5.2%
Sample 3	23834	20813	23219	23818	22921	1242.03	5.4%

*number of samples for each test n=16.

PREPARATION BEFORE THE EXPIREMENT

Item	Preparation
All reagents	Bring all reagents to 37°C prior to use. The assay can also be done at room temperature however we recommend doing it at 37°C for best consistency with our QC results. Also the TMB incubation time estimate (15-25min) is based on 37°C.
Wash Buffer	Dissolve the wash buffer powder in 1000ml of water to make 1X PBS wash buffer.
Biotinylated Anti-Human BIRC7 antibody	It is recommended to prepare this reagent immediately prior to use by diluting the Human BIRC7 Biotinylated antibody (100x) 1:100 with Antibody Diluent. Prepare 100 µl by adding 1 µl of Biotinylated antibody (100x) to 99 µl of Antibody Diluent for each well. Mix gently and thoroughly and use within 2 hours of generation.
Avidin-Biotin-Peroxidase Complex	It is recommended to prepare this reagent immediately prior to use by diluting the Avidin-Biotin-Peroxidase Complex (100x) 1:100 with Avidin-Biotin-Peroxidase Diluent. Prepare 100 µl by adding 1 µl of Avidin-Biotin-Peroxidase Complex (100x) to 99 µl of Avidin-Biotin-Peroxidase Diluent for each well. Mix gently and thoroughly and use within 2 hours of generation.
Human BIRC7 Standard	It is recommended that the standards be prepared no more than 2 hours prior to performing the experiment. Use one 100ng of



	lyophilized Human BIRC7 standard for each experiment. Gently spin the vial prior to use. Reconstitute the standard to a stock concentration of 100ng/ml using 1ml of sample diluent. Allow the standard to sit for a minimum of 10 minutes with gentle agitation prior to making dilutions.
Microplate	The included microplate is coated with capture antibodies and ready-to-use. It does not require additional washing or blocking. The unused well strips should be sealed and stored in the original packaging.

DILUTION OF HUMAN BIRC7 STANDARD

1. Number tubes 1-8. Final Concentrations to be Tube # 1 –10000pg/ml, #2 –5000pg/ml, #3 – 2500pg/ml, #4 – 1250pg/ml, #5 – 625pg/ml, #6 –312.5pg/ml, #7 – 156.25pg/ml, #8 – 0.0 (Blank).
2. For standard #1, add 1000µl of undiluted standard stock solution to tube #1.
3. Add 300 µl of sample diluent to tubes # 2-7.
4. To generate standard #2, add 300 µl of standard #1 from tube #1 to tube #2 for a final volume of 600 µl. Mix thoroughly.
5. To generate standard #3, add 300 µl of standard #2 from tube #2 to tube #3 for a final volume of 600 µl. Mix thoroughly.
6. Continue the serial dilution for tube #4-7.
7. Tube #8 is a blank standard to be used with every experiment.

SAMPLE PREPARATION AND STORAGE

These sample collection instructions and storage conditions are intended as a general guideline and the sample stability has not been evaluated.

Sample Type	Procedure
Cell culture supernatants	Clear sample of particulates by centrifugation, assay immediately or store samples at -20°C.
Serum	Use a serum separator tube (SST) and allow serum to clot at room temperature for about four hours. Then, centrifuge for 15 min at approximately 1,000 x g. assay immediately or store samples at -20°C.
Cell Lysates	Lyse the cells, make sure there are no visible cell sediments. Centrifuge cell lysates at approximately 10000 X g for 5 min. Collect the supernatant.

SAMPLE DILUTION

The target protein concentration should be estimated and appropriate sample dilutions should be selected such that the final protein concentration lies near the middle of the linear dynamic range of the assay.

It is recommended to prepare 150 µl of sample for each replicate to be assayed. The samples should be diluted with sample diluent and mixed gently.



ASSAY PROTOCOL

It is recommended that all reagents and materials be equilibrated to 37°C/room temperature prior to the experiment (see Preparation Before The Experiment if you have missed this information).

1. Prepare all reagents and working standards as directed previously.
2. Remove excess microplate strips from the plate frame and seal and store them in the original packaging.
3. Add 100 μ l of the standard, samples, or control per well. Add 100 μ l of the sample diluent buffer into the control well (Zero well). At least two replicates of each standard, sample, or control is recommended.
4. Cover with the plate sealer provided and incubate for 120 minutes at RT (or 90 min. at 37 °C).
5. Remove the cover and discard the liquid in the wells into an appropriate waste receptacle. Invert the plate on the benchtop onto a paper towel and tap the plate to gently blot any remaining liquid. It is recommended that the wells are not allowed to completely dry at any time.
6. Add 100 μ l of the prepared 1x Biotinylated Anti-Human BIRC7 antibody to each well.
7. Cover with plate sealer and incubate for 90 minutes at RT (or 60 minutes at 37°C).
8. Wash the plate 3 times with the 1x wash buffer.
 - a. Discard the liquid in the wells into an appropriate waste receptacle. Then, invert the plate on the benchtop onto a paper towel and tap the plate to gently blot any remaining liquid. It is recommended that the wells are not allowed to completely dry at any time.
 - b. Add 300 μ l of the 1x wash buffer to each assay well. (For cleaner background incubate for 60 seconds between each wash).
 - c. Repeat steps a-b 2 additional times.
9. Add 100 μ l of the prepared 1x Avidin-Biotin-Peroxidase Complex into each well. Cover with the plate sealer provided and incubate for 40 minutes at RT (or 30 minutes at 37°C).
10. Wash the plate 5 times with the 1x wash buffer.
 - a. Discard the liquid in the wells into an appropriate waste receptacle. Then, invert the plate on the benchtop onto a paper towel and tap the plate to gently blot any remaining liquid. It is recommended that the wells are not allowed to completely dry at any time.
 - b. Add 300 μ l of the 1x wash buffer to each assay well. (For cleaner background incubate for 60 seconds between each wash).
 - c. Repeat steps a-b 4 additional times.
11. Add 90 μ l of Color Developing Reagent to each well. Cover with the plate sealer provided and incubate in the dark for 30 minutes at RT (or 15-25 minutes at 37°C). (The optimal incubation time must be empirically determined. A guideline to look for is blue shading the top four standard wells, while the remaining standards remain clear.)
12. Add 100 μ l of Stop Solution to each well. The color should immediately change to yellow.
13. Within 30 minutes of stopping the reaction, the O.D. absorbance should be read with a microplate reader at 450nm.



DATA ANALYSIS

Average the duplicate readings for each standard, sample, and control. Subtract the average zero standard O.D. reading.

It is recommended that a standard curve be created using computer software to generate a four parameter logistic (4-PL) curve-fit. A free program capable of generating a four parameter logistic (4-PL) curve-fit can be found online at: www.myassays.com/four-parameter-logisticcurve.assay.

Alternatively, plot the mean absorbance for each standard against the concentration. The measured concentration in the sample can be interpolated by using linear regression of each average relative OD against the standard curve generated using curve fitting software. This will generate an adequate but less precise fit of the data.

For diluted samples, the concentration reading from the standard curve must be multiplied by the dilution factor.

Warranty Information

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For further information about this kit, its application or the procedures in this kit, please contact the Technical Service Team at Eagle Biosciences, Inc. at info@eaglebio.com or at 866-411-8023.