

HUMAN OSTEOPROTEGERIN (OPG) ELISA KIT

For the quantitative determination of Human OPG concentrations in cell culture supernates, serum, and plasma.



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

PURCHASE INFORMATION:

| | |
|-----------------------|--|
| ELISA Name | Human Osteoprotegerin ELISA |
| Catalog No. | SK00762-02 |
| Formulation | 96 T |
| Standard range | 62-4000 pg/mL |
| Sensitivity | 31 pg/mL |
| Sample Volume | 100 µl |
| Dilution factor | 5 (Optimal dilutions should be determined by each laboratory for each application) |
| Sample Type | Serum, EDTA Plasma, cell culture |
| Specificity | Human OPG only |
| Intra-assay Precision | 6-8% |
| Inter-assay Precision | 10-12% |
| Storage | 4 °C |

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INTRODUCTION

Human OPG Immunoassay is a 3.5 - 4.5 hour solid phase ELISA designed to measure Human OPG in cell culture supernates, serum, and plasma. It contains recombinant human OPG and antibodies raised against this protein. It has been shown to accurately quantitate recombinant Human OPG. Results obtained with naturally occurring OPG 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 OPG.

PRINCIPLE OF THE ASSAY

This assay employs the quantitative sandwich enzyme immunoassay technique. A monoclonal antibody specific for OPG has been pre-coated onto a microplate. Standards and samples are pipetted into the wells and any OPG present is bound by the immobilized antibody. After washing away any unbound substances, a biotinylated polyclonal antibody specific for OPG 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 OPG bound in the initial step. The color development is stopped and the intensity of the color is measured.

LIMITATIONS OF THE PROCEDURE

- _ FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC PROCEDURES.
- _ 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 Calibrator Diluent 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 the appropriate Calibrator Diluent 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.

MATERIALS PROVIDED

| Description | Code | Quantity |
|---|-----------|----------|
| Microplate - 96 well polystyrene microplate (12 strips of 8 wells) coated with a Human monoclonal antibody against OPG. | 762-02-01 | 1 plate |
| OPG Standard – 4000 pg/vial of recombinant Human OPG in a buffered protein base with preservatives; lyophilized. | 762-02-02 | 1 vial |
| Detection Antibody Concentrate – 120 µL / vial, 100-fold concentrated of Biotinylated polyclonal antibody against OPG with preservatives; lyophilized. | 762-02-03 | 1 vial |
| Positive Control - one of recombinant Human OPG, lyophilized | 762-02-04 | 1 vial |
| Streptavidin-HRP Conjugate -120 ul/vial, 100-fold concentrated solution of Streptavidin conjugate to HRP with preservatives | SAHRP | 1 vial |
| Dilution Buffer - 60mL/vial of buffered protein based solution with preservatives | DB06 | 1 vial |
| Wash Buffer -50 ml/vial, 10-fold concentrated buffered surfactant, with preservative. | WB01 | 1 vial |
| ELISA Substrate Solution - 12 ml / vial of HRP substrate solution | ESS01 | 1 vial |
| Stop Solution (2N HCl) , 13 ml /vial of 2N HCl | S-STOP | 1 vial |
| Plate Covers – Plate sealer. | EAPS | 1 |

STORAGE

Unopened Kit: Store at 2 - 8° C. Do not use past kit expiration date.

Opened / Reconstituted Reagents: May be stored for up to 1 month at 2 - 8°C.

Standard should be stored for up to 1 month at -70° C.

Microplate Wells: Return unused wells to the foil pouch containing the desiccant pack, reseal along entire edge of zip-seal. May be stored for up to 1 month at 2 - 8° C.

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

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.

SAMPLE PREPARATION

Serum and plasma samples require a 5-fold dilution. A suggested 5-fold dilution is 50 µL sample + 200 µL Dilution Buffer.

Use polypropylene test tubes.

REAGENT PREPARATION

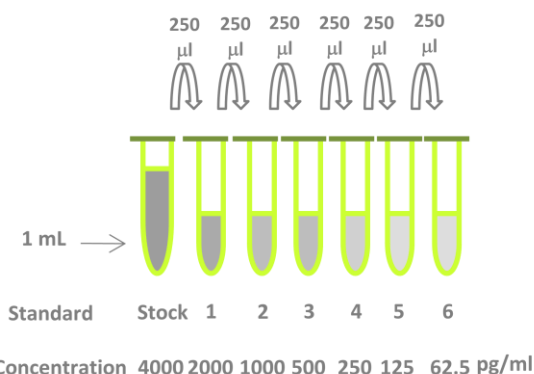
Bring all reagents to room temperature before use.

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.

OPG Standard - Refer to vial label for reconstitution volume. Reconstitute the OPG Standard with 1 ml of Dilution Buffer. This reconstitution produces a stock solution of 4000 pg/mL. Allow the standard to sit for a minimum of 15 minutes with gentle agitation prior to making dilutions. Pipette 250 µL of the

appropriate Dilution Buffer into the tube #1 to #6. Use the stock solution to produce a dilution series (below). Mix each tube thoroughly before the next transfer. The 4000 pg/mL standard serves as the high standard. The appropriate Dilution Buffer serves as the zero standard (0 pg/mL).

| Standard | Standard | Reagent Diluent | Concentration |
|----------|----------------|-----------------|---------------|
| stock | 4000 pg | 1 ml | 4000 pg/ml |
| # 1 | 250µl of stock | 250µl | 2000 pg/ml |
| # 2 | 250µl of 1 | 250µl | 1000 pg/ml |
| # 3 | 250µl of 2 | 250µl | 500 pg/ml |
| # 4 | 250µl of 3 | 250µl | 250 pg/ml |
| # 5 | 250µl of 4 | 250µl | 125 pg/ml |
| # 6 | 250µl of 5 | 250µl | 62.5 pg/ml |



Detection Antibody- Reconstitute the **Detection Antibody concentrated** with 120 µl of Dilution Buffer to produce a 100-fold concentrated stock solution. Pipette 11.88 mL of the appropriate Dilution Buffer into the 15 ml centrifuge tube and transfer 120 µl of 100-fold concentrated stock solution to prepare working solution.

Streptavidin-HRP Conjugate - Pipette 11.88 mL of Dilution Buffer into the 15 ml centrifuge tube and transfer 120 µl of 100-fold concentrated stock solution to prepare working solution.

ASSAY PROCEDURE

Bring all reagents and samples to room temperature before use. It is recommended that standards be assayed in duplicate.

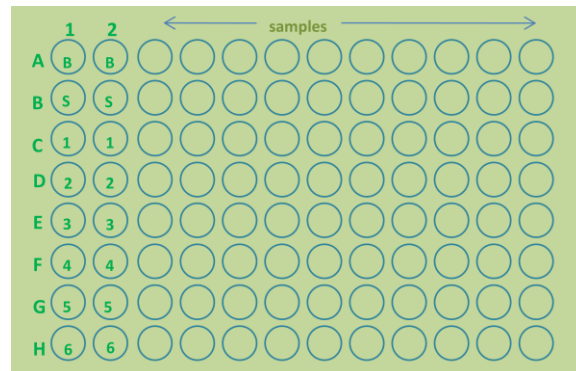
1. Prepare all reagents and working standards as directed in the previous sections.

2. Remove excess micro-plate strips from the plate frame, return them to the foil pouch containing the desiccant pack, reseal.
3. Add 100 µL of Dilution Buffer to Blank well (A1, A2).
4. Add 100 µL of Standard (from B1 to H2), sample, or control per well. Cover with the 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 Wash Buffer (250 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 1 hour on micro-plate shaker at room temperature.
9. Repeat the aspiration/wash as in step 5.
10. Add 100 µL of Substrate Solution to each well. Incubate for 30-45 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 30 minutes, using a micro-plate reader set to 450 nm.

CALCULATION OF RESULTS

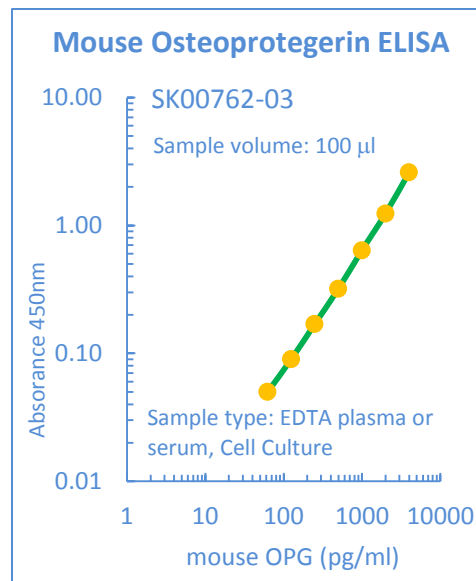
Average the duplicate readings for each standard, control, and sample and subtract the average zero standard optical density. Create a standard curve by reducing the data using computer software capable of generating a four parameter logistic (4-PL) curve fit. As an alternative, construct a standard 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 OPG 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.



TYPICAL DATA

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



CALIBRATION

This immunoassay is calibrated against a highly purified NS0-expressed recombinant Human OPG/Fc Chimera.

SENSITIVITY

Twenty-five assays were evaluated and the minimum detectable dose (MDD) of OPG Was 31 pg/mL.

SPECIFICITY

This assay recognizes both natural and recombinant Human OPG/Fc Chimera.

| OPG Protein | Cross-reactivity |
|--------------------------|------------------|
| Human OPG | 100% |
| Mouse OPG | 11% |
| Human RANK/Fc Chimera | 0 |
| Human RANK Ligand/TRANCE | 0 |
