HUMAN TRANSFORMING GROWTH FACTOR BETA 1 (TGF-β2) ELISA KIT

FOR THE QUANTITATIVE DETERMINATION OF HUMAN TGF-β2 CONCENTRATIONS IN CELL CULTURE SUPERNATES, SERUM, AND PLASMA.

Purchase Information:

ELISA NAME	HUMAN TGF-β2 ELISA
Catalog No.	SK00034-02
Formulation	96 T
Standard range	15.6-1000 pg/mL
Sensitivity	5 pg/mL
Sample Volume	100 µl
Activation	Require
Dilution factor	
Sample Type	Serum, EDTA Plasma, cell culture
Specificity	Human TGF-beta2
Intra-assay Precision	4-6%
Inter-assay Precision	8-10%
Storage	4 °C

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

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INTRODUCTION

Human TGF-β2 Immunoassay is a 3.5 - 4.5 hour solid phase ELISA designed to measure mature/active form of TGF-β2 without association with Latency Associated Peptide (LAP) in cell culture supernates, serum, and plasma. It contains recombinant TGF-β2 and antibodies raised against this protein. It has been shown to accurately quantitie recombinant TGF-β2. Results obtained with naturally occurring TGF-β2 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 TGF-β2.

PRINCIPLE OF THE ASSAY

This assay employs the quantitative sandwich enzyme immunoassay technique. A Monoclonal antibody specific for TGF-β2 has been pre-coated onto a microplate. Standards and samples are pipetted into the wells and any TGF-Bβ2 present is bound by the immobilized antibody. After washing away any unbound substances, a biotinylated polyclonal antibody specific for TGF-β2 is added to the wells. Following a wash to remove any unbound antibody-biotin reagent, HRP link Streptavidin is add 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 TGF-β2 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 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 the appropriate 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.

MATERIALS PROVIDED

DESCRIPTION	CODE	QUANTITY
Microplate - 96 well polystyrene microplate (12 strips of 8 wells) coated with a monoclonal purified IgG against TGF-β1.	034-02-01	1 plate
TGF-β1 Standard – 1000 pg/vial of recombinant TGF-β2 in a buffered protein base with preservatives; lyophilized.	034-02-02	1 vial
Detection Antibody Concentrate– 105 µL / vial, 100-fold concentrated of Biotinylated monoclonal purified IgG against TGF-β2 with preservatives; lyophilized.	034-02-03	1 vial
Positive Control – one vial of recombinant TGF-β2 , lyophilized	034-02-04	1 vial
Streptavidin-HRP Conjugate -120 µl/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	DB01	1 vial
Wash Buffer -50 ml/vial, 10-fold concentrated buffered surfactant, with preservative.	WB01	1 vial
Activation Solution A- 6 ml/vial of 1N HCl solution	DB41	1 vial
Activation Solution B- 6 ml/vial of 1N NaOH solution	DB42	1 vial
Sample Diluent -12 ml/vial of buffered solution with preservatives	DB05	1 vial
TMB Substrate Solution-11 ml / vial of TMB substrate solution	TMB01	1 vial

Stop Solution（0.5M HCl）, 11 ml /vial of 0.5M HCl	**S-STOP**	**1 vial**
Plate Covers – Plate sealer	**EAPS**	**1**

STORAGE

Unopened Kit: Store at 2 - 8° C for up to 6 months. For longer storage, unopened Standard, Positive Control and Detection Antibody Concentrated should be stored at -20 or -70 °C. Do not use past kit expiration date.

Opened / Reconstituted Reagents: *Reconstituted Standard, Detection Antibody and SHOULD BE STORED at -20 °C or – 70°C for up to one months.* Streptavidin - HRP Conjugate 100-fold concentrated and other components may be stored at 2 - 8°C for up to 6 months.

Microplate Wells: Return unused wells to the plastic bag containing the desiccant pack, reseal along entire edge of zip-seal. May be stored for up to 6 months 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

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.

SAMPLE PREPARATION

Acid Activation of Samples: To activate latent TGF-ß2 to the immunoreactive form, the samples (but not standards) must be acidified, and then neutralized. Animal serum used in culture media may contain high levels of latent TGF-ß2, so controls should be run to determine baseline concentrations of TGF-ß2 in culture media.

1. Tissue culture supernatants: Per 100 µl of sample, add 20 µl of 1N HCl; incubate 10 minutes at room temperature, then neutralize with 20 µl of 1N NaOH. Assay immediately. The dilution factor is 1.4.
2. Serum or plasma: require 5-fold dilution with Sample Diluent , then treat as above for supernatants. A suggested 5-fold dilution is 20 µL sample plus 80 µL of Sample Diluent. The final dilution factor is 7. Assay immediately.

Note: 1. Standard and Positive Control DO NOT require acid activation. 2. Most samples will require acid-treatment and neutralization to remove LAP from TGF beta 2 prior to evaluation in this assay. 3. Samples should be tested in the assay immediately after acid treatment and neutralization. 4. It is also possible that some serum and plasma samples may contain low levels of immunoreactive TGF beta 2 that has disassociated from LAP. 5. Naturally occuring, free TGF beta 2 may be measurable in this assay by evaluating samples without acid treatment.

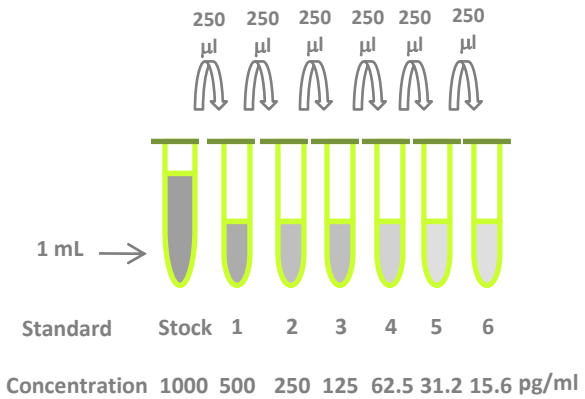
REAGENT PREPARATION

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.

TGF-β2 Standard - Refer to vial label for reconstitution volume. Reconstitute the **TGF-β2** Standard with 1 ml of Dilution Buffer. This reconstitution produces a stock solution of 1000 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 1000 pg/mL standard serves as the high standard. The appropriate Dilution Buffer serves as the zero standard (0 pg/mL).

STANDARD	STANDARD	DILUTION BUFFER	CONCENTRATION
stock	powder	1 ml	1000 pg/ml
# 1	250µl of stock	250µl	500 pg/ml
# 2	250µl of 1	250µl	250 pg/ml
# 3	250µl of 2	250µl	125 pg/ml
# 4	250µl of 3	250µl	62.5 pg/ml
# 5	250µl of 4	250µl	31.2 pg/ml
# 6	250µl of 5	250µl	15.6 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

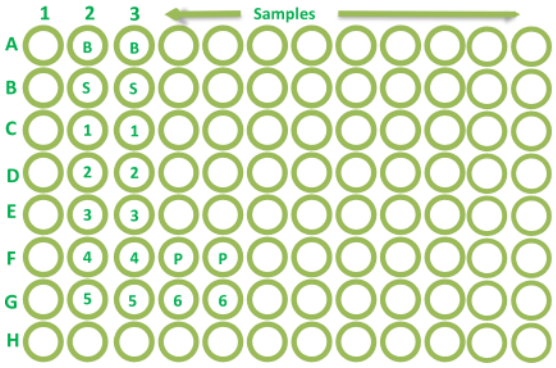
Bring all reagents and samples to room temperature before use. It is recommended that standards be assayed in duplicate.

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 (A2, A3).
4. Add 100 µL of Standard (from B2 to G3, G4 to G5), sample, or control (F4, F5) 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 40 minutes 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 10-20 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, 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 TGF-β2 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.

STANDARD (PG/ML)	CORRECTED (450NM)
15.6	0.029
31.25	0.064
62.5	0.129
125	0.271
250	0.548
500	1.047
1000	1.890

CALIBRATION

This immunoassay is calibrated against a highly purified recombinant Human TGF-β2.

SENSITIVITY

Twenty-five assays were evaluated and the minimum detectable dose (MDD) of TGF-β2 Was 5 pg/mL.

SPECIFICITY

PROTEINS	CROSS-REACTIVITY (%)
Human TGF-β2	100
Human TGF-α	0
Human TGF-β1	0
Human TGF-β3	0
Human TGF-β4	0

SUMMARY OF ASSAY PROCEDURE

PREPARE REAGENTS, SAMPLES AND STANDARDS
↓
Add 100µl 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 to each well. Incubate 2 hours on the plate shaker at RT.
↓
Aspirate and wash 4 times.
↓
Add 100 µl Streptatvin HRP conjugate to each well. Incubate 35 minutes on the plate shaker at RT.
↓
Aspirate and wash 4 times.
↓
Add 100 µl Substrate to each well. Incubate 10-20 min on the bench top. Protect from light.
↓
Add 100 µl Stop Solution to each well. Read 450nm within 15 min