BASIC FIBROBLAST GROWTH FACTOR (bFGF) (HUMAN) ELISA KIT

FOR THE QUANTITATIVE DETERMINATION OF HUMAN BFGF/FGF-2 CONCENTRATIONS IN SERUM AND EDTA PLASMA

ALWAYS REFER TO LOT SPECIFIC PROTCOL PROVIDED WITH EACH KIT FOR INSTRUCTIONS. PROTOCOL MUST BE READ BEFORE USING THIS PRODUCT.

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

PRODUCT INFORMATION:

ELISA NAME	HUMAN BFGF/FGF-2 ELISA
Catalog No.	SK00828-06
Lot No.	
Formulation	96 T
Standard range	7.8 - 500 pg/ml
Sensitivity	5 pg/ml
Sample require	100 µl
Dilution Factor	*Optimal dilutions should be determined by each laboratory for each application*
Sample Type	Serum, EDTA Plasma
Specificity	Human FGF-2
Calibration	Human FGF-2 Recombinant
Intra-assay Precision	4 - 6%
Inter-assay Precision	8 - 12%
Storage	4 °C
This kit contains sufficient materials to run 35 samples duplicated provided that assay is run according to protocol.	

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DESCRIPTION

This Human basic FGF/FGF-2 ELISA Kit contains the necessary components required for the quantitative measurement of recombinant and/or natural human basic FGF from cell culture supernates, serum and plasma in a sandwich ELISA format.

This immunoassay contains recombinant human basic FGF and antibodies raised against this protein. Results from this immunoassay have shown to accurately quantify recombinant and natural basic FGF samples.

ASSAY OVERVIEW

This assay employs the quantitative sandwich ELISA format. The plate is pre-coated with an antibody specific for human basic FGF. The capture antibody can bind to the human basic FGF in the standard and samples. After washing the plate of any unbound substances, a biotinylated antibody against human basic FGF is added to the wells. After another washing of the plate, Streptavidin-HRP Conjugate is added. After the last wash to remove any unbound enzyme, a substrate solution is added to the wells and color develops in direct proportion to the amount of human basic FGF bound in the standard solutions or samples. A standard curve can be established and sample values can be read off the standard curve.

PROCEDURAL LIMITATIONS

_FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC PROCEDURES.
_This ELISA kit should not be used beyond the expiration date on the kit label.
_Do not mix 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.
_Each laboratory must determine the optimal dilution factors for the samples being assayed with a pretest. If samples generate values that are not within the dynamic range of the standard curve, further concentrate or dilute the samples as required with Dilution Buffer and repeat the assay.
_Any modifications in buffers, pipetting technique, washing technique, incubation time or temperature, as well as kit age can cause a change in signal.
_Not all interfering factors have been tested in the immunoassay, therefore the possibility of interference cannot be excluded.

COMPONENTS PROVIDED

DESCRIPTION	CODE	QUANTITY
basic FGF Microplate - 96 well polystyrene microplate (12 strips of 8 wells) coated with a purified antibody against basic FGF.	**828-06-01**	**1 plate**
FGF-21 Standard – 500 pg/vial of recombinant Human basic FGF in a buffered protein base with preservatives; lyophilized.	**828-06-02**	**1 vial**
Detection Antibody– 1.05 mL / vial, 10-fold concentrated of a purified IgG biotinylated against basic FGF with preservatives; lyophilized.	**828-06-03**	**1 vial**
Positive Control – one vial of recombinant basic FGF, lyophilized	**828-06-04**	**1 vial**
Streptavidin HRP Conjugate -120 µl/vial, 100-fold concentrated solution of Streptavidin HRP conjugate	**SAHRP**	**1 vial**
Dilution Buffer- 60mL/vial of buffered protein based solution with preservatives	**DB01**	**1 Bottle**
Antibody Diluent Solution- 12 mL/vial of buffered protein based solution with preservatives	**DB18**	**1 Bottle**
HRP Diluent Solution- 12 mL/vial of buffered protein based solution with preservatives	**DB06**	**1 Bottle**
Wash Buffer -50 ml/vial, 10-fold concentrated buffered surfactant, with preservative.	**WB01**	**1 Bottle**
Substrate Solution-11 ml / vial of substrate solution	**SS01**	**1 Bottle**
Stop Solution- 11 ml /vial of 0.5M HCL	**S-STOP**	**1 Bottle**
Plate Sealer	**EAPS**	**1 Piece**
Plastic Pouch	**P01**	**1 Piece**

STORAGE

Unopened Kit: Store at 2 – 8 °C for up to 8 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 (stock) solution and Detection Antibody concentrated solution SHOULD BE STORED at -20 °C or -70 °C for up to one month. Streptavidin-HRP Conjugate 100-fold concentrated solution and Substrate Solution can be stored at 2 – 8 °C for up to 8 months (**DO NOT FREEZE** and **PROTECT FROM LIGHT**). All other components may be stored at 2 – 8 °C for up to 8 months.
Microplate Wells: Return unused strips to the plastic pouch with the desiccant pack. Microplate may be stored for up to 6 months at 2 – 8 °C after opening.

ADDITIONAL MATERIALS REQUIRED

- Microplate reader capable of absorbance measurement at 450 nm.
- Microplate shaker (250 – 300 rpm).
- Microplate washer or manifold dispenser.
- 100 mL and 500 mL graduated cylinders.
- Multi-channel Pipette, Pipettes and pipette tips.
- Deionized or distilled water.

PRECAUTION

This kit should be handled by those persons who have been trained in and can follow the principles of good laboratory practice. Wear protective clothing such as laboratory overalls, safety glasses and gloves. Care should be taken while handling solutions in this kit to avoid contact with skin or eyes, especially with the stop solution because it contains diluted hydrochloric acid. Wash immediately with water in case of contact on skin or eyes.

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.
Optional: Use Aprotinin (enzyme inhibitor) for ALL sample collection to prevent sample degradation. 0.5 TIU per ml of sample solution.

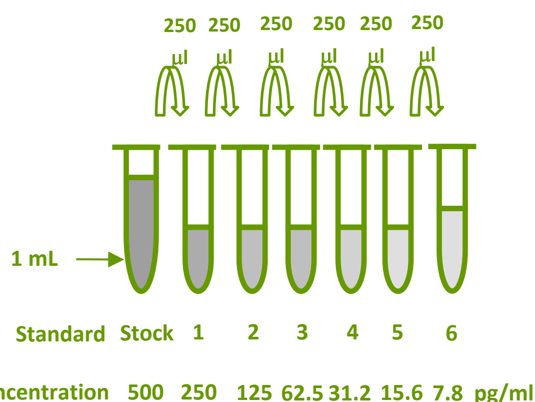
SAMPLE PREPARATION

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 1x Wash Buffer.
basic FGF Standard - Reconstitute the basic FGF Standard with 1 ml of **Dilution Buffer (DB01)**. This reconstitution produces a stock solution of 500 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 #7. Use the stock solution to produce a dilution series (below). Mix each tube thoroughly before the next transfer. The 500 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	500 pg/ml
# 1	250µl of stock	250µl	250 pg/ml
# 2	250µl of 1	250µl	125 pg/ml
# 3	250µl of 2	250µl	62.5 pg/ml
# 4	250µl of 3	250µl	31.25 pg/ml
# 5	250µl of 4	250µl	15.6 pg/ml
# 6	250µl of 5	250µl	7.8 pg/ml



Detection Antibody - Reconstitute the Detection Antibody Concentrate with 1.05 mL of **Antibody**

Diluent Solution (DB18) to produce a 10-fold concentrated stock solution. Pipette 9.45mL of the appropriate Antibody Diluent Solution into the 15 mL centrifuge tube and transfer 1.05 mL of 10-fold concentrated stock solution to prepare working solution.

Streptavidin-HRP Conjugate - Transfer 120 μl of 100-fold concentrated Streptavidin-HRP conjugate stock solution to 11.88 mL of **HRP Diluent Solution (DB06)** to prepare working solution. *Note: 1 x working solution of Streptavidin HRP Conjugate should be used within a few days (protect from light).*

Positive Control- Reconstitute the Positive Control with 0.5 mL of **Dilution Buffer (DB01)**. **Note:** Positive Control could be used within a few days if stored at -20 °C or -70 °C.

ELISA PROTOCOL

Bring all reagents and samples to room temperature before the start of the assay. Blank, standard dilutions, positive control and samples should be assayed in duplicate. ELISA Protocol may need further optimization.

1. Prepare all reagents and working standards as directed in the previous sections.
2. Remove excess microplate strips from the plate frame, return them to the plastic pouch with the desiccant pack.
3. Add 100 μL per well of Dilution Buffer to Blank wells.
4. Add 100 μL of Standard solution from #7 to S (reverse order of serial dilution), sample, or positive control per well. Cover with the plate Sealer. Incubate for 2 hours on microplate shaker at room temperature.
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 plate sealer. Incubate for 2 hours on microplate 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 45 minutes on microplate 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 3 ~7 minutes on microplate shaker 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 FGF-2 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.

SPECIFICITY

PROTEIN	CROSS-REACTIVITY
Human FGF-2	100%
Human FGF-21	0
Human FGF-23, C-Terminal	0
Human FGF-23, N-Terminal	0
Human FGF-1	0
Human FGF-17	0
Human FGF-10	0

TYPICAL DATA

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

STANDARD (PG/ML)	AVERAGE OD450 (CORRECTED)
Blank	0 (0.088)
7.8	0.047
15.6	0.099
31.25	0.166
62.5	0.310
125	0.553
250	0.989
500	1.651

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 solution to each well. Incubate 45 minutes on the plate shaker at RT. **Protect from light.**
⇩
Aspirate and wash 4 times.
⇩
Add 100 µl Substrate Solution to each well. Incubate 3~ 7 min on the plate shaker at RT. **Protect from light.**
⇩
Add 100 µl Stop Solution to each well. Read 450nm within 15 min.