

HUMAN PERIOSTIN/OSF-2 ELISA KIT

FOR THE QUANTITATIVE DETERMINATION OF
HUMAN PERIOSTIN/OSF-2 CONCENTRATIONS
IN SERUM AND EDTA PLASMA



**THIS PROTOCOL OR DATA IS PROVIDED
FOR DEMONSTRATION ONLY.
ALWAYS REFER TO LOT SPECIFIC PROTOCOL
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:

THIS KIT IS FOR ONE TIME USE ONLY.

ELISA NAME	HUMAN PERIOSTIN/OSF-2 ELISA
Catalog No.	SK00072-08
Lot No.	
Formulation	96 T
Standard range	7.8 - 500 ng/mL
Sensitivity	2 ng/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 Periostin/OSF-2
Calibration	Human Periostin/OSF-2 Recombinant
Intra-assay Precision	4 - 6%
Inter-assay Precision	8 - 12%
Storage	2 – 8° C for 1 month, more information check page 2
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 Periostin/OSF-2 ELISA Kit contains the necessary components required for the quantitative measurement of recombinant and/or natural human Periostin/OSF-2 from serum and EDTA plasma in a sandwich ELISA format.

This immunoassay contains recombinant Periostin/OSF-2 and antibodies raised against this protein. Results from this immunoassay have shown to accurately quantify recombinant and natural Periostin/OSF-2 samples.

ASSAY OVERVIEW

This assay employs the quantitative sandwich ELISA format. The plate is pre-coated with an antibody specific for human Periostin/OSF-2. The capture antibody can bind to the human Periostin/OSF-2 in the standard and samples. After washing the plate of any unbound substances, a biotinylated antibody against Periostin/OSF-2 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 Periostin/OSF-2 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
Periostin Microplate - 96 well polystyrene microplate (12 strips of 8 wells) coated with a purified antibody against Periostin.	072-08-01	1 plate
PERIOSTIN Standard – refer to lot of recombinant human Periostin in a buffered protein base with preservative; lyophilized.	072-08-02	1 vial
Detection Antibody – refer to lot, 10-fold concentrate of a biotinylated antibody against Periostin with preservative; lyophilized.	072-08-03	1 vial
Positive Control – one vial of recombinant human Periostin; lyophilized.	072-08-04	1 vial
Streptavidin HRP Conjugate (Red) - 120 µl/vial, 100-fold concentrated solution of Streptavidin HRP conjugate.	SAHRP	1 vial
Dilution Buffer - 40 mL of buffered protein based solution with preservative.	DB06	1 bottle
HRP Diluent Solution - 12 mL of buffered protein based solution with preservative.	DB08A	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 piece
Plastic Pouch	P01	1 piece

STORAGE

Unopened Kit: Store at 2 – 8° C for up to 1 month. For longer storage up to 10 months, unopened Standard, Positive Control, Detection Antibody Concentrate, Dilution Buffer and HRP Diluent Solution should be stored at -20° C. Streptavidin HRP Conjugate and TMB Substrate Solution should be stored at 2 ~ 8 ° C. Do not use kit past expiration date.

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 $\leq -20^{\circ}\text{C}$. 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 $\leq -20^{\circ}\text{C}$. Avoid repeated freeze-thaw cycles.

Optional: Use Aprotinin (enzyme inhibitor) (order Code: 00700-01-25, 25 TIU per vial) 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.

Dilution Buffer (DB06) - Dilution Buffer (DB06) is highly viscous at 2-8 °C storage, warm it in 30-37 °C water bath until liquid flows more freely.

Periostin Standard - Reconstitute the Periostin standard with refer to lot of **Dilution Buffer (DB06)**. 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 **500 ng/mL** standard serves as the high standard. The Dilution Buffer serves as the zero standard (0 ng/mL).

TUBE	STANDARD	DILUTION BUFFER	CONCENTRATION
stock	powder	Refer to lot	500 ng/ml
# 1	250 μL of stock	250 μL	250 ng/ml
# 2	250 μL of 1	250 μL	125 ng/ml
# 3	250 μL of 2	250 μL	62.5 ng/ml
# 4	250 μL of 3	250 μL	31.25 ng/ml
# 5	250 μL of 4	250 μL	15.625 ng/ml
# 6	250 μL of 5	250 μL	7.813 ng/ml

Positive Control - Reconstitute the Positive Control with refer to lot of **Dilution Buffer (DB06)** to produce a working solution.

Detection Antibody Concentrate - Reconstitute the Detection Antibody Concentrate with refer to lot of **Dilution Buffer (DB06)** to produce a 10-fold concentrated stock solution. Pipette 9.45 mL of Dilution Buffer into a 15 mL centrifuge tube and transfer 1.05 mL of 10-fold concentrated stock solution to prepare working solution.

Streptavidin-HRP Conjugate (Red Cap)- Transfer 120 μL of 100-fold concentrated Streptavidin-HRP conjugate stock solution to 11.88 mL of **HRP Diluent Solution (DB08A)** to prepare working solution.
(PROTECT FROM LIGHT)

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. Add 100 μ L per well of Dilution Buffer to Blank wells.
3. Add 100 μ L of standard dilutions in reverse order of serial dilution, samples, or positive control per well. Cover with plate sealer. Incubate for 2 hours on microplate shaker at room temperature.
4. 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 μ L) 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.
5. Add 100 μ L of Detection Antibody working solution to each well. Cover with plate sealer. Incubate for 2 hours on microplate shaker at room temperature.
6. Repeat the aspiration/wash as in step 4.
7. Add 100 μ L of Streptavidin-HRP Conjugate working solution to each well. Incubate for 60 minutes on microplate shaker at room temperature. **Protect from light.**
8. Repeat the aspiration/wash as in step 4.
9. Add 100 μ L of Substrate Solution to each well. Incubate for refer to lot on microplate shaker at room temperature. **Protect from light.**
10. Add 100 μ L 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.
11. Determine the optical density of each well within 15 minutes, using a microplate reader set to 450 nm.

CALCULATION OF RESULTS

Create a standard curve by plotting the log of the known concentrations of the standard dilutions (x-axis) versus the log of its corresponding O.D. (y-axis) and draw the best fit line through the points. It is recommended to use computer software capable of

generating a log-log curve fit to more accurately quantify the standard dilutions.

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

SPECIFICITY

PROTEIN	CROSS-REACTIVITY
Human Periostin	100%
Human Osteoponin	0
Human OSF-1/PTN	0
Human Osteoprotegerin	0
Human RAGE, ECD	0
HFABP	0

TYPICAL STANDARD CURVE

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

STANDARD (NG/ML)	AVERAGE OD450 (CORRECTED)
Blank	0 (refer to lot)
7.813	0.054
15.625	0.083
31.25	0.173
62.5	0.316
125	0.502
250	1.164
500	2.271

LINEARITY

To assess the linearity of the assay, commercially bought pooled serum samples were diluted with Dilution Buffer (DB06) and assayed.

DILUTION FACTOR	ASSAYED (NG/ML)	FINAL (NG/ML)	RECOVERY (%)
40X	539.863	21594.52	100
80X	290.029	23202.32	107

To assess the linearity of the assay, commercially bought pooled EDTA plasma samples were diluted with Dilution Buffer (DB06) and assayed.

DILUTION FACTOR	ASSAYED (NG/ML)	FINAL (NG/ML)	RECOVERY (%)
40X	213.471	8538.84	100
80X	115.369	9229.52	108

CITATIONS

1. N. Scichilone, C. Crimi, A. Benfante, S. Battaglia, M. Iemmolo, M. Spatafora and N. Crimi. Higher serum levels of periostin and the risk of exacerbations in moderate asthmatics. *Asthma Research and Practice* 2016;2:1, DOI: 10.1186/s40733-015-0019-x
2. Park HY et al. Association of blood eosinophils and plasma periostin with FEV1 response after 3-month inhaled corticosteroid and long-acting beta2-agonist treatment in stable COPD patients. *Int J Chron Obstruct Pulmon Dis.* 2015 Dec 22;11:23-30.
3. Naik PK et al. Periostin promotes fibrosis and predicts progression in patients with idiopathic pulmonary fibrosis. *Am J Physiol Lung Cell Mol Physiol.* 2012 Dec 15;303(12):L1046-56.
4. Thomson NC1, et al. Serum periostin in smokers and never smokers with asthma. *Respir Med.* 2015 Apr 3. pii: S0954-6111(15)00108-0.

SUMMARY OF ASSAY PROCEDURE

PREPARE REAGENTS, SAMPLES AND STANDARDS
↓
Add 100 µl of standard dilutions, samples, or positive control to the 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 1 hour on the plate shaker at RT. Protect from light.
↓
Aspirate and wash 4 times.
↓
Add 100 µl Substrate Solution to each well. Incubate refer to lot on plate shaker at RT. Protect from light.
↓
Add 100 µl Stop Solution to each well. Read 450nm within 15 min.