

Human FOLR1 Sandwich ELISA Kit Datasheet

For the quantitative detection of human FOLR1 concentrations in serum, plasma, cell culture supernatants, urine, saliva and human milk.

General Information

Catalogue Number	KE00115
Product Name	Human FOLR1 Sandwich ELISA Kit
Species cross-reactivity	Human
Range (calibration Range)	250 - 8000 pg/mL
Tested applications	Quantification ELISA

Database Links

Entrez Gene	2348
SwissProt	P15328

Kit Components & Storage

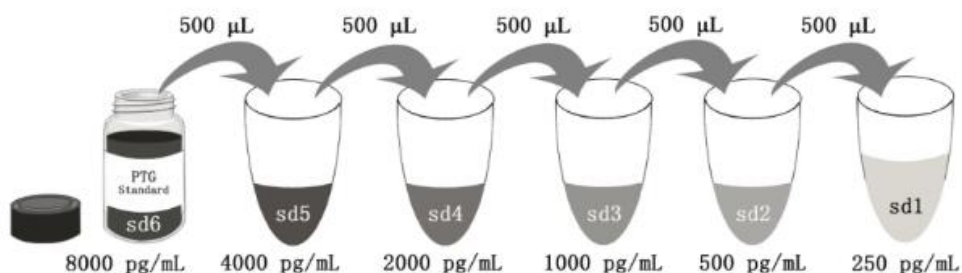
Microplate - antibody coated 96-well microplate (8 well × 12 strips)	1 plate	Unopened Kit: Store at 2-8°C for 6 months or -20°C for 12 months. Opened Kit: All reagents stored at 2-8°C for 7 days. Please use a new standard for each assay.
Protein standard - 16000 pg/bottle; lyophilized*	2 bottles	
Detection Antibody, biotinylated (100×) - 120 µL/vial	1 vial	
Streptavidin-horseradish peroxidase (HRP) (100×) - 120 µL/vial	1 vial	
Sample Diluent PT 4-ef - 30 mL/bottle	2 bottles	
Detection Diluent - 30 mL/bottle	1 bottle	
Wash Buffer Concentrate (20×) - 30 mL/bottle	1 bottle	
Tetramethylbenzidine Substrate (TMB) - 12 mL/bottle	1 bottle	
Stop Solution - 12 mL/bottle	1 bottle	
Plate Cover Seals	3 pieces	

NB: Do not use the kit after the expiration date.

Sample Diluent PT 4-ef is for protein standard and samples.

Detection Diluent is for Detection antibody and Streptavidin-HRP.

*Add 2 mL Sample Diluent PT 4-ef in protein standard. This reconstitution gives a stock solution of 8000 pg/mL.



Add # µL of Standard diluted in the previous step	—	500 µL	500 µL	500 µL	500 µL	500 µL
# µL of Sample Diluent PT 4-ef	2000 µL	500 µL	500 µL	500 µL	500 µL	500 µL
	"sd6"	"sd5"	"sd4"	"sd3"	"sd2"	"sd1"

Product Description

KE00115 is a solid phase sandwich Enzyme Linked-Immuno-Sorbent Assay (Sandwich ELISA). The human FOLR1 ELISA kit is to be used to detect and quantify protein levels of endogenous human . The assay recognizes human FOLR1. An antibody specific for human FOLR1 has been pre-coated onto the microwells. The human FOLR1 protein in samples is captured by the coated antibody after incubation. Following extensive washing, another antibody of biotinylated specific for human FOLR1 is added to detect the captured human FOLR1 protein. For signal development, Streptavidin-HRP is added, followed by Tetramethylbenzidine (TMB) reagent. Solution containing sulfuric acid is used to stop color development and the color intensity which is proportional to the quantity of bound protein is measurable at 450 nm with the correction wavelength set at 630 nm.

Background

Folate receptor 1 (FOLR1), also known as folate receptor alpha or adult folate-binding protein (FBP), is a 38-kDa glycoprotein belonging to the folate receptor family. The receptor binds to folate and reduced folic acid derivatives and mediates delivery of 5-methyltetrahydrofolate to the interior of cells. FOLR1 is a secreted protein that either anchors to membranes via a glycosylphosphatidylinositol linkage or exists in a soluble form. FOLR1 expression is often limited to the apical surfaces of epithelium in the lung, kidney and choroid plexus but is differentially overexpressed in a variety of solid tumors such as ovarian cancer, non-small cell lung cancer, breast cancer, kidney cancer and high-grade osteosarcoma.

Sample Preparation

The samples may require proper dilution to fall within the range of the assay. The human milk is better to be diluted 1:1000 before assay, the urine is better to be diluted 1:4, the saliva is better to be diluted 1:16 and 1:2 dilution is

recommended for cell culture supernatants.

Safety Notes

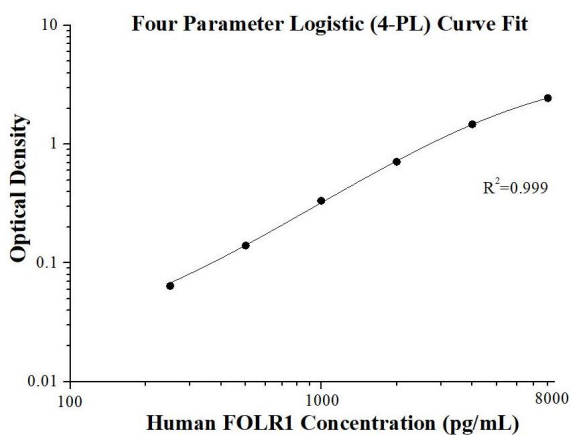
This product is sold for lab research and development use ONLY and not for use in humans or animals. Avoid any skin and eye contact with Stop Solution and TMB. In case of contact, wash thoroughly with water.

Assay Procedure Summary

Step	Reagent	Volume	Incubation	Wash	Notes
1	Standard and Samples	100 µL	120 min	4 times	Cover Wells incubate at 37°C
2	Diluent Antibody Solution	100 µL	60 min	4 times	Cover Wells incubate at 37°C
3	Diluent HRP Solution	100 µL	40 min	4 times	Cover Wells incubate at 37°C
4	TMB Substrate	100 µL	15-20 min	Do not wash	Incubate in the dark at 37°C
5	Stop Solution	100 µL	0 min	Do not wash	-
6	Read plate at 450 nm and 630 nm immediately after adding Stop solution. DO NOT exceed 5 minutes.				

Example data

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



(pg/mL)	O.D	Average	Corrected
0	0.095 0.093	0.094	-
250	0.157 0.158	0.158	0.028
500	0.234 0.233	0.234	0.14
1000	0.434 0.422	0.428	0.334
2000	0.793 0.819	0.806	0.712
4000	1.549 1.583	1.566	1.472
8000	2.514 2.571	2.543	2.449

Precision

Intra-assay Precision (Precision within an assay) Three samples of known concentration were tested 20 times on one plate to assess intra-assay precision.

Inter-assay Precision (Precision between assays) Three samples of known concentration were tested in 24 separate assays to assess inter-assay precision.

Intra-assay Precision				
Sample	n	Mean (pg/mL)	SD	CV%
1	20	494.9	14.5	2.9
2	20	944.2	22.4	2.4
3	20	3,824.7	110.3	2.9

Inter-assay Precision				
Sample	n	Mean (pg/mL)	SD	CV%
1	24	482.8	21.0	4.3
2	24	933.4	50.6	5.4
3	24	3,760.1	133.3	3.5

Recovery

The recovery of FOLR1 spiked to three different levels in four samples throughout the range of the assay in various matrices was evaluated.

Sample Type		Average% of Expected	Range (%)
Human plasma	1:2	86	75-96
	1:4	91	80-105
Cell culture supernatants	1:2	104	82-121
	1:4	107	100-115
Human milk	1:4000	88	84-101
	1:8000	106	99-112
Human saliva	1:32	108	98-123
	1:64	101	87-120
Human urine	1:8	95	79-118
	1:16	89	73-112

Sample Values

Samples from healthy volunteers were evaluated for FOLR1 in this assay. No medical histories were available for the donors used in this study.

Sample Type	Mean of Detectable (pg/mL)	Range (pg/mL)
Human serum (n=16)	528	193-962
Human plasma(n=16)	292	139-602
Human milk(n=7)	4,373,875	2,996,644-6,225,737
Human saliva(n=8)	67,114	36,309-182,706
Human urine(n=8)	8,003	947-18,037

Sensitivity

The minimum detectable dose of human FOLR1 is 3.5 pg/mL. This was determined by adding two standard deviations to the concentration corresponding to the mean O.D. of 20 zero standard replicates.

Linearity

To assess the linearity of the assay, cell culture supernatants were spiked with high concentrations of FOLR1 in various matrices and diluted with the appropriate Sample Diluent to produce samples with values within the dynamic range of the assay. Serum, plasma, human milk, saliva and urine samples were diluted with the appropriate **Sample Diluent** to produce samples with values within the dynamic range of the assay. (The milk samples were initially diluted 1:500, the saliva samples were initially diluted 1:4, the urine samples were initially diluted 1:2)

		Human plasma	Cell culture supernatants	Human milk	Human saliva	Human urine
No dilution	Average% of Expected	87	—	—	—	—
	Range (%)	86-87	—	—	—	—
1:2	Average% of Expected	96	92	94	100	100
	Range (%)	82-100	84-96	87-100	100-102	87-115
1:4	Average% of Expected	102	88	90	98	98
	Range (%)	85-111	80-94	86-93	83-105	83-100
1:8	Average% of Expected	101	93	96	101	100
	Range (%)	100-102	75-104	92-100	83-112	95-112
1:16	Average% of Expected	—	100	107	98	103
	Range (%)	—	87-113	98-116	85-110	94-116

References

1. Elnakat H, et al. Distribution, functionality and gene regulation of folate receptor isoforms: implications in targeted therapy. *Adv Drug Deliv Rev.* 56(8):1067-84 (2004).
2. Leung F, et al. Folate-receptor 1 (FOLR1) protein is elevated in the serum of ovarian cancer patients. *Clin Biochem.* 46(15):1462-8 (2013).
3. Thomas A, et al. Farletuzumab in lung cancer. *Lung Cancer.* 80(1):15-8 (2013).