

Product datasheet

Human Midkine ELISA Kit ab193761

SimpleStep ELISA[®]

[3 References](#) [6 Images](#)

Overview

Product name Human Midkine ELISA Kit

Detection method Colorimetric

Precision

Intra-assay

Sample	n	Mean	SD	CV%
HepG2	8			2%

Inter-assay

Sample	n	Mean	SD	CV%
HepG2	3			3.9%

Sample type Cell culture supernatant, Serum, Cell culture extracts, Hep Plasma, EDTA Plasma, Cit plasma

Assay type Sandwich (quantitative)

Sensitivity 14.4 pg/ml

Range 39.1 pg/ml - 2500 pg/ml

Recovery

Sample specific recovery

Sample type	Average %	Range
Cell culture supernatant	100	82% - 115%
Serum	114	113% - 115%
Cell culture extracts	156	152% - 160%
Hep Plasma	83	73% - 90%
EDTA Plasma	112	109% - 114%
Cit plasma	128	115% - 137%

Assay time	1h 30m
Assay duration	One step assay
Species reactivity	Reacts with: Human Does not react with: Cow, Pig
Product overview	As of August 14, 2019, Human Midkine SimpleStep ELISA® kit has been re-developed. We have identified new recombinant monoclonal antibodies to provide improved performance and consistency when quantifying Midkine protein in human serum, plasma, cell culture supernatant, cell and tissue extracts.

SimpleStep ELISA® technology employs capture antibodies conjugated to an affinity tag that is recognized by the monoclonal antibody used to coat our SimpleStep ELISA® plates. This approach to sandwich ELISA allows the formation of the antibody-analyte sandwich complex in a single step, significantly reducing assay time. See the SimpleStep ELISA® protocol summary in the image section for further details. Our SimpleStep ELISA® technology provides several benefits:

- Single-wash protocol reduces assay time to 90 minutes or less
- High sensitivity, specificity and reproducibility from superior antibodies
- Fully validated in biological samples
- 96-wells plate breakable into 12 x 8 wells strips

A 384-well SimpleStep ELISA® microplate ([ab203359](#)) is available to use as an alternative to the 96-well microplate provided with SimpleStep ELISA® kits.

Notes

Midkine (MK), also known as neurite growth-promoting factor 2 (NEGF2), is a 13kDa heparin-binding growth factor or cytokine composed of two domains: The N-terminally located N-domain and the C-terminally located C-domain, which are connected by a hinge. The C-domain plays a role in neuronal development, whereas the N-domain is important for protein stability and dimerization. MK is involved in development, reproduction, repair, inflammation, innate immunity, control of blood pressure and angiogenesis.

MK is strongly expressed during embryogenesis and due to its distribution in the embryo it has been proposed to play a role in neurogenesis, epithelial-mesenchymal interactions and mesoderm remodeling. Expression in adult tissues is restricted to the kidney, epidermis, bronchial epithelium, lymphocytes and macrophages, but it is strongly expressed in the brain, kidney, blood vessels and heart after tissue injury as well as during inflammation, infection and oncogenesis. During inflammation, substratum-bound MK enhances neutrophil and macrophage migration directly and through induction of chemokine expression. On the other hand, soluble MK is associated with differentiation of regulatory T-cells, induction of epithelial-mesenchymal transition, angiogenesis, fibrinolytic and anti-microbial activity.

MK signaling is mediated by cell surface receptors as well as membrane proteins such as Protein Tyrosine Phosphatase ζ (PTP ζ), low density lipoprotein receptor-related proteins (LRP), Notch2, integrins, anaplastic lymphoma kinase (ALK) and neuroglycan C. Binding of MK to PTP ζ induces tyrosine phosphorylation in β -catenin and Wnt signaling inhibition. Furthermore it induces phosphorylation of PI3K, MAPK, PKC and Src family kinase. Binding of MK to LRP leads to embryonic neuronal survival and prevention of hypoxic injury via Akt and HIF1 α . Binding of MK to integrins activates focal adhesion kinase, paxillin and STAT1 α pathway leading to increase invasiveness of cancer cells. Activation of ALK by MK leads to phosphorylation of IRS-1, MAPK, PI3K and activation of NF- κ B.

Due to its multifunctionality, MK has become an emerging target of drug development for the treatment of multiple diseases. On the one hand, administration of MK ameliorates ischemic

injury, enhances oocyte maturation and promotes neurogenesis therefore limiting the progression of neurodegenerative diseases. However on the other hand, due to its over-expression in malignant tumors and in inflammation, MK inhibitors may be useful in the treatment of cancer, multiple sclerosis, hypertension and osteoporosis.

Platform Microplate (12 x 8 well strips)

Properties

Storage instructions Store at +4°C. Please refer to protocols.

Components	1 x 96 tests
10X Human Midkine Capture Antibody	1 x 600µl
10X Human Midkine Detector Antibody	1 x 600µl
10X Wash Buffer PT (ab206977)	1 x 20ml
5X Cell Extraction Buffer PTR (ab193970)	1 x 10ml
Antibody Diluent CPI - HAMA Blocker (ab193969)	1 x 6ml
Human Midkine Lyophilized Recombinant Protein	2 vials
Plate Seals	1 unit
Sample Diluent NS (ab193972)	1 x 50ml
SimpleStep Pre-Coated 96-Well Microplate (ab206978)	1 unit
Stop Solution	1 x 12ml
TMB Development Solution	1 x 12ml

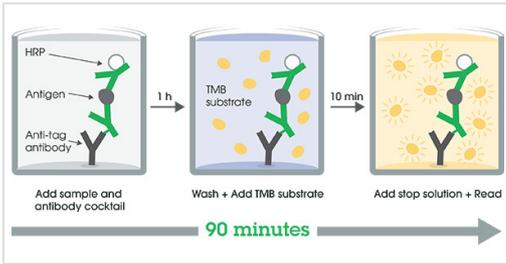
Function Developmentally regulated, secreted growth factor homologous to pleiotrophin (PTN), which has heparin binding activity. Binds anaplastic lymphoma kinase (ALK) which induces ALK activation and subsequent phosphorylation of the insulin receptor substrate (IRS1), followed by the activation of mitogen-activated protein kinase (MAPK) and PI3-kinase, and the induction of cell proliferation. Involved in neointima formation after arterial injury, possibly by mediating leukocyte recruitment. Also involved in early fetal adrenal gland development.

Tissue specificity Expressed in various tumor cell lines. In insulinoma tissue predominantly expressed in precancerous lesions.

Sequence similarities Belongs to the pleiotrophin family.

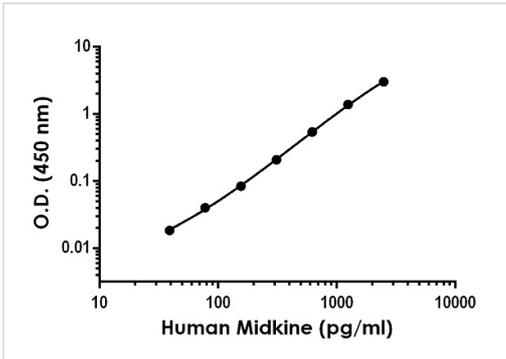
Cellular localization Secreted.

Images



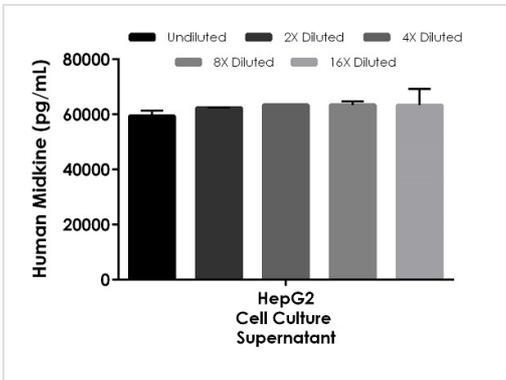
Other - Human Midkine ELISA Kit (ab193761)

SimpleStep ELISA technology allows the formation of the antibody-antigen complex in one single step, reducing assay time to 90 minutes. Add samples or standards and antibody mix to wells all at once, incubate, wash, and add your final substrate. See protocol for a detailed step-by-step guide.



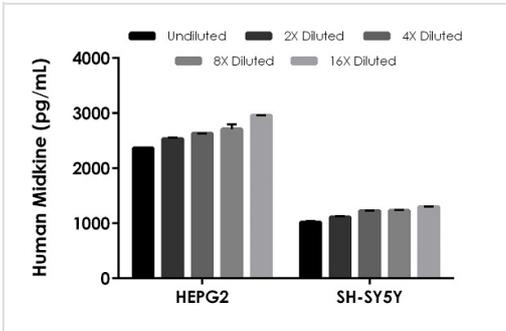
Example of human Midkine standard curve in Sample Diluent NS.

The Midkine standard curve was prepared as described in Section 10. Raw data values are shown in the table. Background-subtracted data values (mean +/- SD) are graphed.



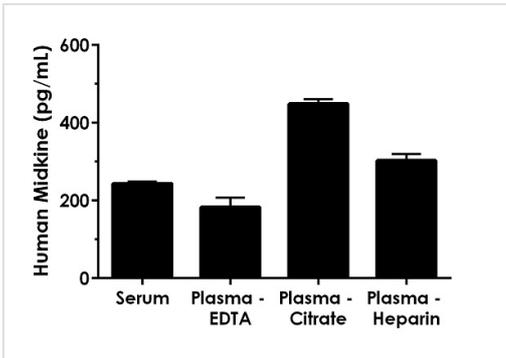
Interpolated concentrations of native Midkine in human cell culture supernatant samples.

The concentrations of Midkine were measured in duplicates, interpolated from the Midkine standard curves and corrected for sample dilution. Undiluted samples are as follows: HepG2 cell culture supernatant 2.5%. The interpolated dilution factor corrected values are plotted (mean +/- SD, n=2). The mean Midkine concentration was determined to be 6,242 pg/mL in serum.



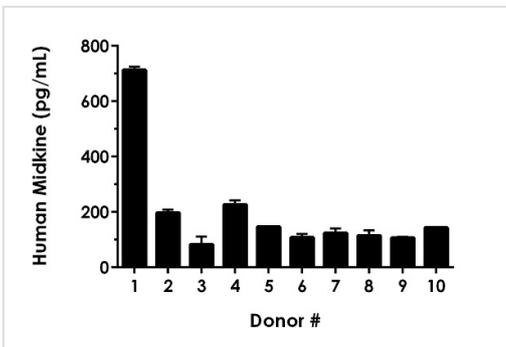
Interpolated concentrations of native Midkine in human HepG2 and SH-SY5Y cell extract samples and samples based on a 50 µg/mL extract load.

The concentrations of Midkine were measured in duplicate and interpolated from the Midkine standard curve and corrected for sample dilution. The interpolated dilution factor corrected values are plotted (mean +/- SD, n=2). The mean Midkine concentration was determined to be 2641 pg/mL in HepG2 cell extract and 1179 pg/mL in SH-SY5Y cell extract.



Interpolated concentrations of native Midkine in human serum, plasma samples.

The concentrations of Midkine were measured in duplicates, interpolated from the Midkine standard curves and corrected for sample dilution. Undiluted samples are as follows: serum 50%, plasma (EDTA) 50%, plasma (citrate) 25%, and plasma (heparin) 50%. The interpolated dilution factor corrected values are plotted (mean +/- SD, n=2). The mean Midkine concentration was determined to be 243 pg/mL in serum, 183 pg/mL in plasma (EDTA), 449 pg/mL plasma (citrate) and 303 pg/mL in plasma (heparin).



Serum from ten individual healthy human male donors was measured in duplicate.

Interpolated dilution factor corrected values are plotted (mean +/- SD, n=2). The mean Midkine concentration was determined to be 164 pg/mL with a range of 69 – 594 pg/mL.

Please note: All products are "FOR RESEARCH USE ONLY. NOT FOR USE IN DIAGNOSTIC PROCEDURES"

Our Abpromise to you: Quality guaranteed and expert technical support

- Replacement or refund for products not performing as stated on the datasheet
- Valid for 12 months from date of delivery
- Response to your inquiry within 24 hours

- We provide support in Chinese, English, French, German, Japanese and Spanish
- Extensive multi-media technical resources to help you
- We investigate all quality concerns to ensure our products perform to the highest standards

If the product does not perform as described on this datasheet, we will offer a refund or replacement. For full details of the Abpromise, please visit <https://www.abcam.com/abpromise> or contact our technical team.

Terms and conditions

- Guarantee only valid for products bought direct from Abcam or one of our authorized distributors