Human Myeloperoxidase (MPO) ELISA Kit

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Hinweis/Note:
Der Packungsbeileger dient nur als erste Information.
Der relevante Packungsbeileger liegt der Ware bei.

The datasheet is only a first information.
The relevant datasheet is included with the product.

For any questions regarding troubleshooting or performing the assay, please contact our support team at support@assaypro.com.

Thank you for choosing Assaypro.

Symbol Key

Consult instructions for use.

Assay Summary

Add 50 µl of Standard/ Sample per well.
Incubate 2 hours.

Wash, then add
50 µl of Biotinylated Antibody per well.
Incubate 1 hour.

Wash, then add
50 µl of SP Conjugate per well.
Incubate 30 minutes.

Wash, then add
50 µl of Chromogen Substrate per well.
Incubate 12 minutes.

Add 50 µl of Stop Solution per well.
Read at 450 nm immediately.

Assay Template

	A	B	C	D	E	F	G	H
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								

AssayMax Human Myeloperoxidase (MPO) ELISA Kit

Catalog No. EM6501-1
Lot No. 082191411R

Introduction

Myeloperoxidase (MPO), a member of the heme peroxidase superfamily, is secreted by activated neutrophils, monocytes, and some macrophages. The 150 kDa MPO is a tetrameric protein with 2 light subunits and 2 glycosylated heavy subunits bound to a prosthetic heme group (1). This enzyme possesses both peroxidase and chlorination activities which catalyze the production of a potent oxidant hypochlorous acid central to immune defenses (2). However, under pathological conditions, MPO-derived oxidants can also lead to cell and tissue damage. It contributes to the initiation and propagation of acute and chronic vascular inflammatory disease, including atherosclerosis (3). MPO is linked to Alzheimer disease, coronary artery disease and lung cancer (4-6). Antibodies against MPO are connected to autoimmune disease systemic vasculitis such as glomerulonephritis, mononeuritis multiplex and alveolar hemorrhage (7).

Principle of the Assay

The AssayMax Human Myeloperoxidase ELISA (Enzyme-Linked Immunosorbent Assay) kit is designed for detection of myeloperoxidase in human plasma, serum, urine, saliva, milk, CSF, and cell culture samples. This assay employs a quantitative sandwich enzyme immunoassay technique that measures myeloperoxidase in less than 4 hours. A polyclonal antibody specific for myeloperoxidase has been pre-coated onto a 96-well microplate with removable strips. Myeloperoxidase in standards and samples is sandwiched by the immobilized antibody and biotinylated polyclonal antibody specific for myeloperoxidase, which is recognized by a streptavidin-peroxidase conjugate. All unbound material is then washed away and a peroxidase enzyme substrate is added. The color development is stopped and the intensity of the color is measured.

Caution and Warning

- **Prepare all reagents (working diluent buffer, wash buffer, standard, biotinylated antibody, and SP conjugate) as instructed, prior to running the assay.**

- **Prepare all samples prior to running the assay. The dilution factors for the samples are suggested in this protocol. However, the user should determine the optimal dilution factor.**
- **Spin down the SP conjugate vial and the biotinylated antibody vial before opening and using contents.**
- This kit is for research use only.
- The kit should not be used beyond the expiration date.
- The Stop Solution is an acidic solution.

Reagents

- **Human Myeloperoxidase Microplate:** A 96-well polystyrene microplate (12 strips of 8 wells) coated with a polyclonal antibody against human myeloperoxidase.
- **Sealing Tapes:** Each kit contains 3 precut, pressure sensitive sealing tapes, which can be cut to fit the format of the individual assay.
- **Human Myeloperoxidase Standard:** Human myeloperoxidase in a buffered protein base (2.4 ng, lyophilized).
- **Biotinylated Human Myeloperoxidase Antibody (50x):** A 50-fold biotinylated polyclonal antibody against myeloperoxidase (140 µl).
- **MIX Diluent Concentrate (10x)**: A 10-fold concentrated buffered protein base (30 ml).
- **Wash Buffer Concentrate (20x)**: A 20-fold concentrated buffered surfactant (30 ml, 2 bottles).
- **Streptavidin-Peroxidase Conjugate (SP Conjugate):** A 100-fold concentrate (80 µl).
- **Chromogen Substrate**: A ready-to-use stabilized peroxidase chromogen substrate tetramethylbenzidine (8 ml).
- **Stop Solution**: A 0.5 N hydrochloric acid to stop the chromogen substrate reaction (12 ml).

Storage Condition

- Upon arrival, immediately store components of the kit at recommended temperatures up to the expiration date.
- Store SP Conjugate and Biotinylated Antibody at -20°C.
- Store Microplate, Diluent Concentrate (10x), Wash Buffer, Stop Solution, and Chromogen Substrate at 2-8°C.
- Unused microplate wells may be returned to the foil pouch with the desiccants and resealed. May be stored for up to 30 days in a vacuum desiccator.
- Diluent (1x) may be stored for up to 30 days at 2-8°C.
- Store Standard at 2-8°C before reconstituting with Diluent and at -20°C after reconstituting with Diluent.

Other Supplies Required

- Microplate reader capable of measuring absorbance at 450 nm.
- Pipettes (1-20 µl, 20-200 µl, 200-1000 µl, and multiple channel).
- Deionized or distilled reagent grade water.

Sample Collection and Storage

- **Plasma:** Collect plasma using one-tenth volume of 0.1 M sodium citrate as an anticoagulant. Centrifuge samples at 3000 x *g* for 10 minutes. Dilute samples 1:200 into MIX Diluent and assay. The undiluted samples can be stored at -20°C or below for up to 3 months. Avoid repeated freeze-thaw cycles (EDTA or Heparin can also be used as an anticoagulant).
- **Serum:** Samples should be collected into a serum separator tube. After clot formation, centrifuge samples at 3000 x *g* for 10 minutes, and remove serum. Dilute samples 1:200 into MIX Diluent and assay. The undiluted samples can be stored at -20°C or below for up to 3 months. Avoid repeated freeze-thaw cycles.
- **Cell Culture Supernatants:** Centrifuge cell culture media at 3000 x *g* for 10 minutes to remove debris. Collect supernatants and assay. Store the remaining samples at -20°C or below. Avoid repeated freeze-thaw cycles.
- **Saliva:** Collect saliva using samples tube. Centrifuge samples at 800 x *g* for 10 minutes. Dilute samples 1:2000 into MIX Diluent and assay. The undiluted samples can be stored at -20°C or below for up to 3 months. Avoid repeated freeze-thaw cycles.
- **Urine:** Collect urine using sample pot. Centrifuge samples at 800 x *g* for 10 minutes and assay. If necessary, dilute samples within the range of 1x- 10x into MIX Diluent, and assay. The undiluted samples can be stored at -20°C or below for up to 3 months. Avoid repeated freeze-thaw cycles.
- **Milk:** Collect milk using sample pot. Centrifuge samples at 800 x *g* for 10 minutes. Dilute samples 1:400000 into MIX Diluent and assay. The undiluted samples can be stored at -20°C or below for up to 3 months. Avoid repeated freeze-thaw cycles.
- **CSF:** Collect cerebrospinal fluid (CSF) using sample pot. Centrifuge samples at 3000 x *g* for 10 minutes. Dilute samples 1:50 into MIX Diluent and assay. The undiluted samples can be stored at -80°C for up to 3 months. Avoid repeated freeze-thaw cycles.

Refer to Sample Dilution Guidelines below for further instruction.

Guidelines for Dilutions of 1:100 or Greater (*for reference only; please follow the protocol for specific dilution suggested)*	
1:100	**1:10000**
A) 4 ul sample: 396 µl buffer(100x) = 100 fold dilution *Assuming the needed volume is less than or equal to 400 µl.*	A) 4 µl sample : 396 µl buffer (100x) B) 4 µl of A : 396 µl buffer (100x) = 10000 fold dilution *Assuming the needed volume is less than or equal to 400 µl.*
1:1000	**1:100000**
A) 4 µl sample : 396 µl buffer (100x) B) 24 µl of A : 216 µl buffer (10x) = 1000 fold dilution *Assuming the needed volume is less than or equal to 240 µl.*	A) 4 µl sample : 396 µl buffer (100x) B) 4 µl of A : 396 µl buffer (100x) C) 24 µl of B : 216 µl buffer (10x) = 100000 fold dilution *Assuming the needed volume is less than or equal to 240 µl.*

Reagent Preparation

- Freshly dilute all reagents and bring all reagents to room temperature before use.
- **MIX Diluent Concentrate (10x)**: If crystals have formed in the concentrate, mix gently until the crystals have completely dissolved. Dilute the MIX Diluent Concentrate 1:10 with reagent grade water. Store for up to 30 days at 2-8°C.
- **Human Myeloperoxidase Standard:** Reconstitute the 2.4 ng of Human Myeloperoxidase Standard with 0.6 ml of MIX Diluent to generate a 4 ng/ml standard solution. Allow the standard to sit for 10 minutes with gentle agitation prior to making dilutions. Prepare duplicate or triplicate standard points by serially diluting the standard solution (4 ng/ml) 1:2 with MIX Diluent to produce 2, 1, 0.5, 0.25, 0.125, and 0.0625 ng/ml solutions. MIX Diluent serves as the zero standard (0 ng/ml). Any remaining solution should be frozen at -20°C and used within 30 days.

Standard Point	Dilution	[Myeloperoxidase] (ng/ml)
P1	Standard (4 ng/ml)	4.000
P2	1 part P1 + 1 part MIX Diluent	2.000
P3	1 part P2 + 1 part MIX Diluent	1.000
P4	1 part P3 + 1 part MIX Diluent	0.500
P5	1 part P4 + 1 part MIX Diluent	0.250
P6	1 part P5 + 1 part MIX Diluent	0.125
P7	1 part P6 + 1 part MIX Diluent	0.063
P8	MIX Diluent	0.000

- **Biotinylated Human Myeloperoxidase Antibody (50x):** Spin down the biotinylated antibody briefly and dilute the desired amount of the antibody 1:50 with MIX Diluent. Any remaining solution should be frozen at -20°C.
- **Wash Buffer Concentrate (20x):** If crystals have formed in the concentrate, mix gently until the crystals have completely dissolved. Dilute the Wash Buffer Concentrate 1:20 with reagent grade water.
- **SP Conjugate (100x):** Spin down the SP Conjugate briefly and dilute the desired amount of the conjugate 1:100 with MIX Diluent. Any remaining solution should be frozen at -20°C.

Assay Procedure

- Prepare all reagents, standard solutions, and samples as instructed. Bring all reagents to room temperature before use. The assay is performed at room temperature (20-25°C).
- Remove excess microplate strips from the plate frame and return them immediately to the foil pouch with desiccants inside. Reseal the pouch securely to minimize exposure to water vapor and store in a vacuum desiccator.
- Add 50 µl of Human Myeloperoxidase Standard or sample per well. Cover wells with a sealing tape and incubate for 2 hours. Start the timer after the last addition.
- Wash five times with 200 µl of Wash Buffer manually. Invert the plate each time and decant the contents; hit 4-5 times on absorbent material to completely remove the liquid. If using a machine, wash six times with 300 µl of Wash Buffer and then invert the plate, decanting the contents; hit 4-5 times on absorbent material to completely remove the liquid.
- Add 50 µl of Biotinylated Human Myeloperoxidase Antibody to each well and incubate for 1 hour.
- Wash the microplate as described above.
- Add 50 µl of Streptavidin-Peroxidase Conjugate per well and incubate for 30 minutes. Turn on the microplate reader and set up the program in advance.
- Wash the microplate as described above.
- Add 50 µl of Chromogen Substrate per well and incubate for 12 minutes or until the optimal blue color density develops. Gently tap plate to ensure thorough mixing and break the bubbles in the well with pipette tip.
- Add 50 µl of Stop Solution to each well. The color will change from blue to yellow.
- Read the absorbance on a microplate reader at a wavelength of 450 nm immediately. If wavelength correction is available, subtract readings at 570 nm from those at 450 nm to correct optical imperfections.

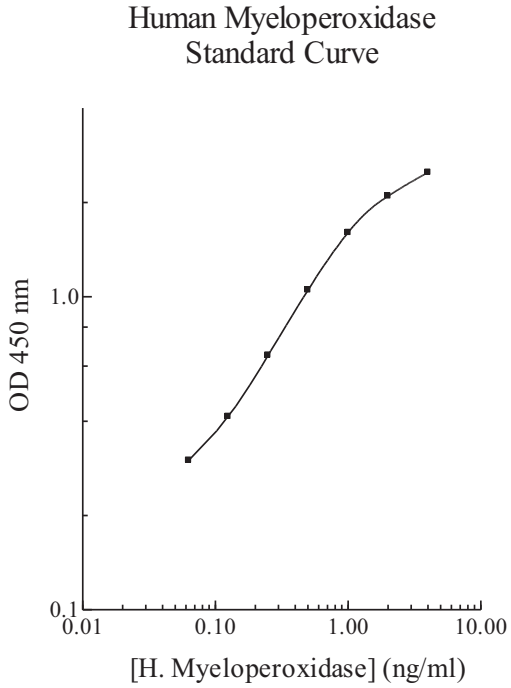
Otherwise, read the plate at 450 nm only. Please note that some unstable black particles may be generated at high concentration points after stopping the reaction for about 10 minutes, which will reduce the readings.

Data Analysis

- Calculate the mean value of the duplicate or triplicate readings for each standard and sample.
- To generate a standard curve, plot the graph using the standard concentrations on the x-axis and the corresponding mean 450 nm absorbance on the y-axis. The best-fit line can be determined by regression analysis using log-log or four-parameter logistic curve-fit.
- Determine the unknown sample concentration from the Standard Curve and multiply the value by the dilution factor.

Standard Curve

- The curve is provided for illustration only. A standard curve should be generated each time the assay is performed.



Performance Characteristics

- The minimum detectable dose of Myeloperoxidase is ~ 0.06 ng/ml.
- Intra-assay and inter-assay coefficients of variation were 5.1% and 7.2% respectively.

Linearity

	Average Percentage of Expected Value	
Sample Dilution	**Plasma**	**Serum**
1:100	91%	90%
1:200	97%	96%
1:400	105%	106%

Recovery

Standard Added Value	0.18 – 1.5 ng/ml
Recovery %	85 – 114%
Average Recovery %	102%

Cross-Reactivity

Species	**% Cross Reactivity**
Beagle	None
Bovine	None
Monkey	10%
Mouse	None
Rat	None
Swine	None
Rabbit	None
Human	100%

Reference Value

- Normal human myeloperoxidase plasma levels range from 20 to 300 ng/ml.
- Human Pool Normal Plasma (n=10) and Human Normal Plasma samples (n=10) were tested. On average, myeloperoxidase plasma level was 98 ng/ml.
- Human Pool Normal Serum samples (n=10) were tested. On average, myeloperoxidase serum level was 121 ng/ml.
- Human Urine samples (n=20) were tested. On average, myeloperoxidase urine level was 6.59 ng/ml.

References

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