



## Human GM-CSF ELISA

Catalog Number EA-0502

(For Research Use Only)

### Introduction

Granulocyte-macrophage colony-stimulating factor (GM-CSF) is a cytokine secreted by macrophages, T cells, mast cells, endothelial cells and fibroblasts. It functions as a white blood cell growth factor. GM-CSF stimulates stem cells to produce granulocytes (neutrophils, eosinophils, and basophils) and monocytes. Monocytes exit the circulation and migrate into tissue, where they mature into macrophages. It has recently been shown that GM-CSF plays a key role in inflammatory and autoimmune diseases.

### Principle of the assay

GM-CSF ELISA is based on the principle of a solid phase enzyme-linked immunosorbent assay. The assay utilizes rabbit anti-human GM-CSF for immobilization on the microtiter wells and biotininated rabbit anti-human GM-CSF antibodies along with streptavidin conjugated to horseradish peroxidase (HRP) for detection. The test sample is allowed to react simultaneously with the two antibodies, resulting in the GM-CSF molecules being sandwiched between the solid phase and enzyme-linked antibodies. After incubation, the wells are washed to remove unbound-labeled antibodies. A HRP substrate, TMB, is added to result in the development of a blue color. The color development is then stopped with the addition of Stop Solution changing the color to yellow. The concentration of GM-CSF is directly proportional to the color intensity of the test sample. Absorbance is measured spectrophotometrically at 450 nm.

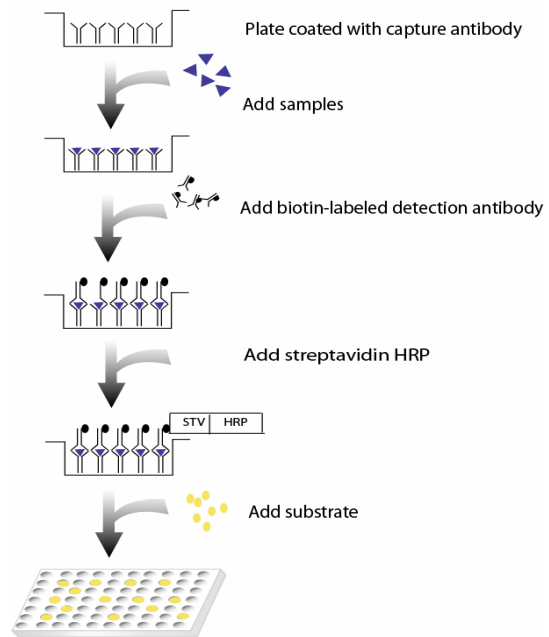


Diagram of ELISA

### Materials provided with the kit

Component	Qty	Store at
8x12 96-well microplate coated with anti-human GM-CSF antibody	1	4°C
Biotin labeled anti-human GM-CSF antibody	25µL	-20°C
Recombinant Human GM-CSF standard (400ng/ml)	10µL	-20°C
Streptavidin-HRP conjugate	50µL	4°C
1xDiluent buffer	40mL	4°C
5X Assay wash buffer	40mL	4°C
Substrate	10mL	4°C
Stop solution	5mL	4°C

### Material required but not provided

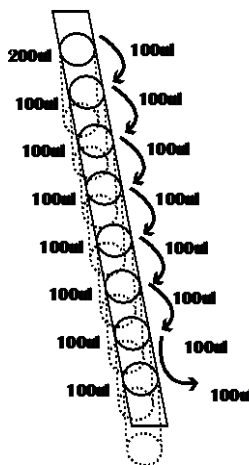
- Microplate reader capable of measuring absorbance at 450 nm
- Deionized or distilled water.

## Reagent preparation before starting experiment

- Dilute the 5x Assay wash buffer to 1x buffer  
40ml 5x Assay wash buffer  
160ml ddH<sub>2</sub>O
- Use serum-free conditioned media or original or 10-fold diluted sera. Sera can be diluted with 1 X Diluent buffer. When serum-containing conditioned media is required, be sure to use serum as a control.
- Dilute 100 times of Human recombinant GM-CSF (400ng/ml) with 1X Diluent buffer to 4000pg/ml and then 2-fold serial dilutions. Add 2ul Human Recombinant GM-CSF in 200ul 1X Diluent Buffer (See Step 2 below for detailed instruction)
- Dilute biotin labeled rabbit anti-human GM-CSF antibodies 1:400 with 1X Diluent buffer before use.
- Dilute streptavidin-HRP 1:200 with 1X Diluent buffer before use.

## Assay procedure

1. Calculate the number of samples to decide how many strips need to be used.
2. Prepare standard according to diagram.



1. Add 200  $\mu$ l 1X Diluent buffer to the 1<sup>st</sup> well. Add 100  $\mu$ l 1x Diluent Buffer to the rest of the wells in the strip.
2. Add 2  $\mu$ l of standard to the first well.
3. Mix dilution in 1<sup>st</sup> well and transfer 100  $\mu$ l from the first well to the 2<sup>nd</sup> well.
4. Repeat mix and transfer 100  $\mu$ l into each additional well as pictured.

3. Add 100  $\mu$ l of sample per well and incubate for 1 hour at room temperature with gentle shaking.
4. Aspirate each well and wash by adding 200  $\mu$ l of 1X Assay wash buffer. Repeat the process three times for a total of three washes. Completely remove liquid at each wash. After the last wash, remove any remaining liquid by inverting the plate against clean paper towels.
5. Add 100  $\mu$ l of diluted biotin-labeled rabbit anti-human GM-CSF antibody to each well and incubate for 1 hour at room temperature with gentle shaking.
6. Repeat the aspiration/wash as in step 4.

7. Add 100  $\mu$ l of diluted streptavidin-HRP conjugate to each well and incubate for 45 min at room temperature with gentle shaking.
8. Repeat the aspiration/wash as in step 4.
9. Add 100  $\mu$ l of substrate to each well and incubate for 10-30 minutes.
10. Add 50  $\mu$ l of Stop solution to each well. The color in the wells should change from blue to yellow.
11. Determine the optical density of each well with a microplate reader at 450 nm within 30 minutes.