Signosis
Innovative Plate Assay Solutions

Human IL-1β ELISA

Catalog Number EA-0531 **(For Research Use Only)**

Introduction

IL-1β is a member of the interleukin-1 family of cytokines. It non-productively binds the IL-1β receptor thereby modulating the pro-inflammatory effects of IL-1α and IL-1β. Mutations in IL-1β have been linked to osteoporotic fractures, gastric cancer, schizophrenia, and the rare disease, Deficiency of the Interleukin-1–Receptor Antagonist (DIRA). Recombinant IL-1β is currently used to treat autoimmune disorders and lymphomas.

Principle of the assay

IL-1β ELISA is based on the principle of a solid phase enzyme-linked immunosorbent assay. The assay utilizes a rabbit anti-human IL-1β antibody for immobilization on the microtiter wells and a biotinated rabbit anti-human IL-1β antibody 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 IL-1β 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 IL-1β is directly proportional to the color intensity of the test sample. Absorbance is measured spectrophotometrically at 450 nm.

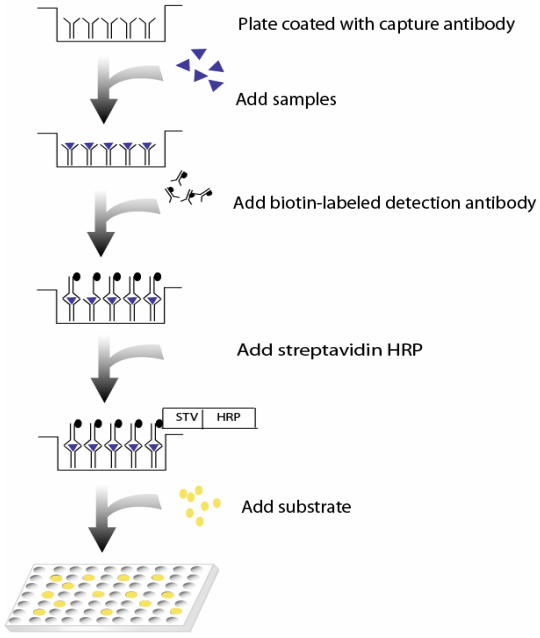


Diagram of ELISA

Materials provided with the kit

Component	Qty	Store at
8x12 96-well microplate coated with rabbit anti-human IL-1b antibodies	1	4°C
Biotin labeled goat anti-human IL-1b antibodies	25µL	-20°C
Recombinant Human IL-1b standard (400ng/ml)	10µL	-20°C
Streptavidin-HRP conjugate	50µL	4°C
1X Diluent 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

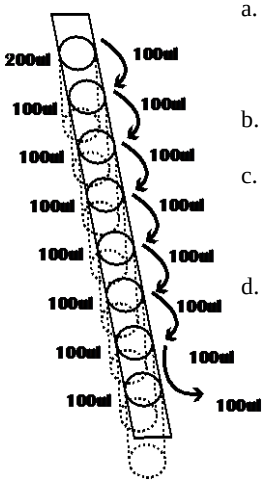
- Microplate reader capable of measuring absorbance at 450 nm
- Deionized or distilled water.

Reagent preparation before starting experiment

- Dilute the 5x Assay wash buffer to 1x buffer
  40ml 5x Assay wash buffer
  160ml ddH2O
- 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 IL-1β (400ng/ml) to 4000pg/ml by adding 2µl Human recombinant IL-1β in 200µl 1x Diluent Buffer and then 2-fold serial dilutions (See Step 2 below for detailed instruction
- Dilute 400 times of biotin labeled goat anti-human IL-1β with 1X Diluent buffer before use.
- Dilute 200 times of streptavidin-HRP with 1X Diluent buffer before use.

Assay procedure

1. Calculate the number of samples to decide how many strips need to be used.
2. See instruction and diagram below for standard preparation.



a. Add 180µl 1X Diluent to first well. Add 100ul 1X Diluent Buffer to the rest wells of strip.
b. Add 20µl of Recombinant IL-1β (90ng/ml) to 1st well.
c. Mix dilutions in 1st well and transfer 100ul from the 1st well to the next dilution (See picture).
d. Incubate for 1 hr at room temperature with gentle shaking

3. Add 100ul of sample per well and incubate for 1 hour at room temperature with gentle shaking.
4. Aspirate each well and wash by adding 200µl 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 100µl of diluted biotin-labeled anti-human IL-1β 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 µl 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 100µl of substrate to each well and incubate for 10-30 minutes.
10. Add 50µl 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.