



Distribuito in ITALIA da  
**Li StarFish S.r.l.**  
Via Cavour, 35  
20063 Cernusco S/N (MI)  
telefono 02-92150794  
fax 02-92157285  
info@listarfish.it  
www.listarfish.it

*Optimize Your Research*

## General Tumor Necrosis Factor Alpha ELISA Kit

### USER INSTRUCTION

**Cat.No BTB-E0003Ge**

**Standard Curve Range:** 3ng/L - 900ng/L

**Sensitivity:** 1.54ng/L

**Size:** 96 wells

**Storage:** Store the reagents at 2-8°C. For long term storage refer to the expiration date keep it at -20°C. Avoid repeated thaw cycles. If individual reagents are opened it is recommended that the kit be used within 1 month.

*\*This product is for research use only, not for use in diagnosis procedures. It's highly recommend to read this instruction entirely before the use.*

### PRECISION

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

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

$CV(\%) = SD/mean \times 100$

Intra-Assay:  $CV < 8\%$

Inter-Assay:  $CV < 10\%$

### INTENDED USE

This sandwich kit is for the accurate quantitative detection of General Tumor Necrosis Factor Alpha (also known as TNF- $\alpha$ ) in serum, plasma, cell culture supernates, cell lysates, tissue homogenates.

### ASSAY PRINCIPLE

This kit is a Enzyme-Linked Immunosorbent Assay (ELISA). TNF- $\alpha$  is added to the wells pre-coated with TNF- $\alpha$  monoclonal antibody. After cubation a biotin-conjugated anti-General TNF- $\alpha$  antibody is added and binds to General TNF- $\alpha$ . After incubation unbound biotin-conjugated

anti-General TNF- $\alpha$  antibody is washed away during a washing step. Streptavidin-HRP is added and binds to the biotin-conjugated anti-General TNF- $\alpha$  antibody. After incubation unbound Streptavidin-HRP is washed away during a washing step. Substrate solution is then added and color develops in proportion to the amount of General TNF- $\alpha$ . The reaction is terminated by addition of acidic stop solution and absorbance is measured at 450 nm.

### REAGENT PROVIDED

Components	Quantity
Standard Solution (960ng/L)	0.5ml x 1
Pre-coated ELISA Plate	12 * 8 well strips x 1
Standard Diluent	3ml x 1
Streptavidin-HRP	6ml x 1
Stop Solution	6ml x 1
Substrate Solution A	6ml x 1
Substrate Solution B	6ml x 1
Wash Buffer Concentrate (30x)	20ml x 1
Biotin-Conjugate Anti-General TNF- $\alpha$ Antibody	1ml x 1
User Instruction	1
Plate Sealer	2 pics
Zipper bag	1

### MATERIALS REQUIRED BUT NOT SUPPLIED

- 37°C $\pm$ 0.5°C incubator
- Absorbent paper
- Precision pipettes and disposable pipette tips
- Clean tubes
- Deionized or distilled water
- Microplate reader with 450  $\pm$  10nm wavelength filter

### PRECAUTIONS

- Prior to use, the kit and sample should be warmed naturally to room temperature 30 minutes.
- Once the desired number of strips has been removed, immediately reseal the bag to protect the remain from deterioration. Cover all reagents when not in use.
- Make sure pipetting order and rate of addition from well-to-well when pipetting reagents.
- This instruction must be strictly followed in the experiment.

- Pipette tips and plate sealer in hand should be clean and disposable to avoid cross-contamination.
- Avoid using the reagents from different batches together.
- Substrate solution B is sensitive to light, don't expose substrate solution B to light for a long time.
- Stop solution contains acid. Please wear eye, hand and skin protection when using this material. Avoid contact of skin or mucous membranes with kit reagent.
- The kit should not be used beyond the expiration date.

## SPECIMEN COLLECTION

**Serum** Allow serum to clot for 10-20 minutes at room temperature. Centrifuge at 2000-3000 RPM for 20 minutes.

**Plasma** Collect plasma using EDTA or heparin as an anticoagulant. Centrifuge samples for 15 minutes at 2000-3000 RPM at 2 - 8°C within 30 minutes of collection.

**Urine** Collect by sterile tube. Centrifuge at 2000-3000 RPM for approximately 20 minutes. When collecting pleuroperitoneal fluid and cerebrospinal fluid, please follow the procedures above-mentioned.

**Cell culture supernatant** Collect by sterile tubes when examining secrete components. Centrifuge at 2000-3000 RPM for approximately 20 minutes. Collect the supernatants carefully. When examining the components within the cell, use PBS (pH 7.2-7.4) to dilute cell suspension to the cell concentration of approximately 1 million/ml. Damage cells through repeated freeze-thaw cycles to let out the inside components. Centrifuge at 2000-3000 RPM for approximately 20 minutes.

**Tissue** Rinse tissues in PBS (pH 7.4) to remove excess blood thoroughly and weigh before homogenization. Mince tissues and homogenize them in PBS (pH7.4) with a glass homogenizer on ice. Thaw at 2-8°C or freeze at -20°C. Centrifuge at 2000-3000 RPM for approximately 20 minutes.

### Note

- Sample concentrations should be predicted before being used in the assay. If the sample concentration is not within the range of the standard curve, users must **contact us** to determine the optimal sample for their particular experiments.
- Samples to be used within 5 days should be stored at 2-8°C. Samples should be aliquoted or

must be stored at -20°C within 1 month or -80°C within 6 months. Avoid repeated freeze thaw cycles.

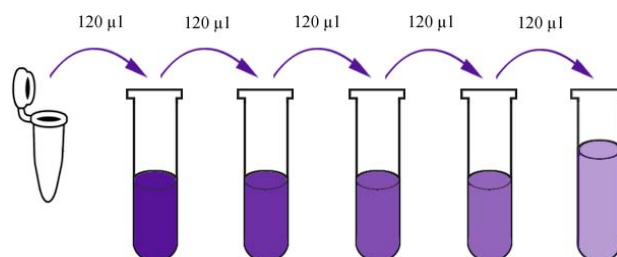
- Samples should be brought to room temperature before starting the assay.
- Samples containing NaN<sub>3</sub> can't be tested as it inhibits the activity of Horse Radish Peroxidase (HRP).
- Collect the supernatants carefully. When sediments occurred during storage, centrifugation should be performed again.
- Hemolysis can greatly impact the validity of test results. Take care to minimize hemolysis.

**\*SAMPLE CAN'T BE DILUTED WITH THIS KIT. ONCE THE SAMPLE HAS BEEN DILUTED IT WILL RESULT IN HIGH BACKGROUND!**

### REAGENTS PREPARATION

- All reagents should be brought to room temperature before use.
- **Standard** Reconstitute the 120µl of the standard (960ng/L) with 120µl of standard diluent to generate a 480ng/L standard stock solution. Allow the standard to sit for 15 mins with gentle agitation prior to making dilutions. Prepare duplicate standard points by serially diluting the standard stock solution (480ng/L) 1:2 with standard diluent to produce 240ng/L, 120ng/L, 60ng/L and 30ng/L solutions. Standard diluent serves as the zero standard(0 ng/L). Any remaining solution should be frozen at -20°C and used within one month. Dilution of standard solutions suggested are as follows:

480ng/L	Standard No.5	120µl Original Standard + 120µl Standard Diluent
240ng/L	Standard No.4	120µl Standard No.5 + 120µl Standard Diluent
120ng/L	Standard No.3	120µl Standard No.4 + 120µl Standard Diluent
60ng/L	Standard No.2	120µl Standard No.3 + 120µl Standard Diluent
30ng/L	Standard No.1	120µl Standard No.2 + 120µl Standard Diluent



Standard Concentration	Standard No.5	Standard No.4	Standard No.3	Standard No.2	Standard No.1
960ng/L	480ng/L	240ng/L	120ng/L	60ng/L	30ng/L

- **Wash Buffer** Dilute 20ml of Wash Buffer Concentrate 30x into deionized or distilled water to yield 500 ml of 1x Wash Buffer. If crystals have formed in the concentrate, mix gently until the crystals have completely dissolved.

## ASSAY PROCEDURE

1. Prepare all reagents, standard solutions and samples as instructed. Bring all reagents to room temperature before use. The assay is performed at room temperature.
2. Determine the number of strips required for the assay. Insert the strips in the frames for use. The unused strips should be stored at 2-8°C.
3. Add 50µl standard to standard well.
4. Add 40µl sample to sample wells and then add 10µl anti-TNF- $\alpha$  antibody to sample wells, then add 50µl streptavidin-HRP to sample wells and standard wells ( Not blank control well ) . Mix well. Cover the plate with a sealer. Incubate 60 minutes at 37°C.
5. Remove the sealer and wash the plate 5 times with wash buffer. Soak wells with at least 0.35 ml wash buffer for 30 seconds to 1 minute for each wash. For automated washing, aspirate all wells and wash 5 times with wash buffer, overfilling wells with wash buffer. Blot the plate onto paper towels or other absorbent material.
6. Add 50µl substrate solution A to each well and then add 50µl substrate solution B to each well. Incubate plate covered with a new sealer for 10 minutes at 37°C in the dark.
7. Add 50µl Stop Solution to each well, the blue color will change into yellow immediately.
8. Determine the optical density (OD value) of each well immediately using a microplate reader set to 450 nm within 30 min after adding the stop solution.

## SUMMARY

Prepare all reagents, samples and standards.

Add samples, standards and ELISA solutions. Incubate for 1 hour at 37°C.

Wash the plate 5 times.

Add substrate solution A and B. Incubate for 10 minutes at 37°C for color development.

Add stop solution.

Read the OD value within 10 minutes.

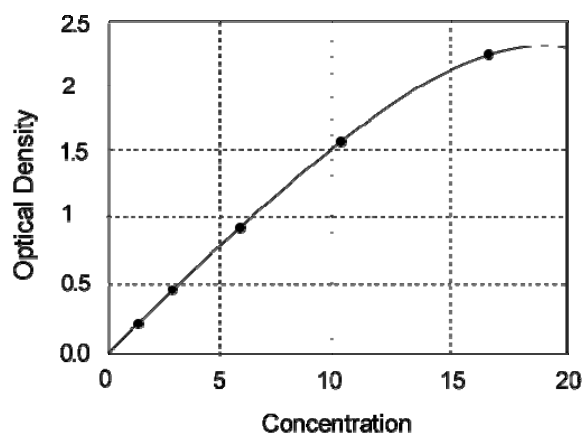
Calculate.

### CALCULATION OF RESULTS

Construct a standard curve by plotting the average OD for each standard on the vertical (Y) axis against the concentration on the horizontal (X) axis and draw a best fit curve through the points on the graph. These calculations can be best performed with computer-based curve-fitting software and the best fit line can be determined by regression analysis. If the standard have been diluted, the concentration read from the standard curve must be multiplied by the dilution factor.

### TYPICAL DATA

This standard curve is only for demonstration purposes. A standard curve should be generated with each assay.



## TROUBLESHOOTING

### Possible Case

### Solution

#### High Background

- Improper washing
  - Substrate was contaminated
  - Non-specific binding of antibody
  - Plate are not be sealing incompletely
  - Incorrect incubation temperature
  - Substrate exposed to light prior to use
  - Contaminated wash buffer
- Increasing duration of soaking steps
  - Replace. Substrate should be clean and avoid crossed contamination by using the sealer
  - Replace another purified antibody or blocking buffer
  - Make sure to follow the instruction strictly
  - Incubate at room temperature
  - Keep substrate in a dark place
  - Use a clean buffers and sterile filter

#### Weak Signal

- Improper washing
  - Incorrect incubation temperature
  - Antibody are not enough
  - Reagent are contaminated
  - Pipette are not clean
- Increasing duration of soaking steps
  - Incubate at room temperature
  - Increase the concentration of the antibody
  - Use new one
  - Pipette should be clean

#### No Signal

- Reagent are contaminated
  - Sample prepared incorrectly
  - Antibody are not enough
  - Wash buffer contains sodium azide
  - HRP was not added
- Use new one
  - Make sure the sample workable/dilution
  - Increase the antibody concentration
  - Use a new wash buffer and avoid sodium azide in it
  - Add HRP according to the instruction

#### Poor Standard Curve

- Improper standard dilution
  - Inccorect storage of reagents
  - Incomplete washing of the wells
  - Capture antibody did not bind to the plate
- Reconstitute standard according to the instruction
  - Store the reagents in the ELISA kit according to the printed instruction before using them
  - Make sure wells are washed adequately by filling the wells with wash buffer and all residual antibody solutions crossed well before washing.
  - Replace a new ELISA plate

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



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