GENLISA® Epstein-Barr Virus Capsid Antigen IgG Antibody ELISA

REF : KBVH038

Ver 1.0

RUO

Enzyme Immunoassay for the Quantitative Determination of Epstein-Barr Virus Capsid Antigen IgG Antibody in serum, plasma and other biological samples.

RUO	**For Research Use Only**	**REF**	**Catalog Number**
	**Store At**	**LOT**	**Batch Code**
	**Manufactured By**		**Biological Risk**
	**Expiry Date**		**Consult Operating Instructions**

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REF KBVH038 Σ 96 tests

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Introduction:

The GENLISA® ELISA kits are used for assessing the specific biomarker in samples analytes which may be serum, plasma and cell culture supernatant as validated with the kit. The kit employs an indirect ELISA technique.

Intended Use:

The GENLISA® Epstein-Barr Virus Capsid Antigen IgG Antibody ELISA kit is used as an analytical tool for quantitative determination of Epstein-Barr Virus Capsid Antigen IgG Antibody in serum, plasma and other biological samples.

Principle:

The method employs indirect ELISA technique. Antigens are pre-coated onto microwells. Samples and standards are pipetted into microwells and Epstein-Barr Virus Capsid Antigen IgG Antibody present in the sample are bound by the antigens. Epstein-Barr Virus Capsid Antigen IgG Antibody conjugated to HRP is pipetted and incubated to form a complex. After washing microwells in order to remove any non-specific binding, the substrate solution (TMB) is added to microwells and color develops proportionally to the amount of Epstein-Barr Virus Capsid Antigen IgG Antibody in the sample. Color development is then stopped by addition of stop solution. Absorbance is measured at 450 nm.

Materials Provided:

1. Epstein-Barr Virus Capsid Antigen IgG Antibody (EB.VCA IgG) Capture Antigen Coated Microtiter Plate (96 wells) – 1 no
2. Epstein-Barr Virus Capsid Antigen IgG Antibody Standard - 6 vials x 0.3 ml
3. Epstein-Barr Virus Capsid Antigen IgG Antibody:HRP Conjugate – 10 ml
4. Sample Dilution - 6 ml
5. (20X) Wash Buffer – 25 ml
6. TMB Substrate – 12 ml
7. Stop Solution – 12 ml
8. Instruction Manual

Materials to be provided by the End-User:

1. Microtiter Plate Reader able to measure absorbance at 450 nm.
2. Deionized (DI) water
3. Wash bottle or automated microplate washer
4. Clean tubes and Eppendorf tubes
5. Precision single and multi-channel pipette and disposable tips.
6. 37°C incubator
7. Timer.

Handling/Storage:

1. All reagents should be stored as indicated on the component label.
2. All the reagents and wash solutions should be used within 12 months from manufacturing date.
3. Before using, bring all components to room temperature (18-25ºC). Upon assay completion ensure all components of the kit are returned to appropriate storage conditions.
4. The Substrate is light-sensitive and should be protected from direct sunlight or UV sources.

Health Hazard Warnings:

1. Reagents that contain preservatives may be harmful if ingested, inhaled or absorbed through the skin.
2. For Research Use Only.

Sample Preparation and Storage:

Specimens should be clear and non-hemolyzed. Samples should be run at a number of dilutions to ensure accurate quantitation.

1. Extract as soon as possible after specimen collection as per relevant procedure. The samples should be tested as soon as possible after the extraction. Alternately the extracted samples can be kept in -20°C. Avoid repeated freeze-thaw cycles.
2. **Serum-** Coagulate at room temperature for 10-20 minutes; centrifuge for 20-min at 2000-3000 rpm. Remove the supernatant. If precipitation appears, recentrifuge.
3. **Plasma-** Use EDTA or citrate plasma as an anticoagulant, mix for 10-20 minutes; centrifuge for 15-min at 2000-3000 rpm. Remove the supernatant carefully. If precipitation appears, recentrifuge.
4. **Urine-** Collect urine in a sterile container, centrifuge for 20-min at 2000-3000 rpm. Remove the supernatant. If precipitation appears, recentrifuge.
5. **Cell Culture Supernatant-** Collect sample in a sterile container. Centrifuge for 20-mins at 2000-3000 rpm. Remove the supernatant carefully. When examining the components within the cell, dilute cell suspension with PBS (pH 7.2-7.4), if cell concentration is greater than 1 million/ml. Damage the cells by repeated freeze-thaw cycles to release intracellular components. Centrifuge for 20-min at 2000-3000 rpm. If precipitation appears, centrifuge again.
6. **Cell Lysate – for adherent cells-** Remove the culture medium and wash with PBS, normal saline or serum-free medium. Add an appropriate amount of lysis buffer and gently aspirate to ensure through cell contact. Typically cells will be lysed within 10 seconds. For suspension cells: Centrifuge to collect cells, then wash with PBS, normal saline, or serum-free medium. Add lysis buffer and aspirate to disperse cells. Gently tap with fingers to complete lysis. After complete lysis, centrifuge at 10,000 – 14,000xg for 3-5 minutes. Collect the supernatant immediately for analysis or aliquoting, then store at -20°C.

Note: *Grossly hemolyzed samples are not suitable for use in this assay.*

Reagent Preparation (all reagents should be diluted immediately prior to use):

1. Before use, all components should be rewarmed at least 120 min to ensure full rewarmed to room temperature.
2. Concentrated detergent: When concentrated detergent is taken out of the refrigerator, crystals will be produced, which is a normal phenomenon. The crystals will be completely dissolved by heating with water bath. Concentrated detergent and distilled water are diluted in a ratio of 1:20, that is, part of concentrated detergent is added to 19 parts of distilled water.
3. TMB Substrate shall be thoroughly mixed in a volume of 1:1 before use and used within 15 minutes after mixing.
4. Bring all reagents to Room temperature before use.
5. To make **Wash Buffer (1X)**; dilute **25 ml of 20X Wash Buffer in 475 ml of DI water**.

Procedural Notes:

1. In order to achieve good assay reproducibility and sensitivity, proper washing of the plates to remove excess un-reacted reagents is essential.
2. High Dose Hook Effect may be observed in samples with very high concentrations of Epstein-Barr Virus Capsid Antigen IgG Antibody. High Dose Hook Effect is due to excess of antigen for very high concentrations of Epstein-Barr Virus Capsid Antigen IgG Antibody present in the sample.
3. Epstein-Barr Virus Capsid Antigen IgG Antibody concentration of the undiluted sample is less than the diluted sample, this may be indicative of the Hook Effect.
4. Avoid assay of Samples containing sodium azide (NaN_3), as it could destroy the HRP activity resulting in under-estimation of the amount of Epstein-Barr Virus Capsid Antigen IgG Antibody.
5. It is recommended that all Standards and Samples be assayed in duplicates or triplicates.
6. Maintain a repetitive timing sequence from well to well for all the steps to ensure that the incubation timings are same for each well.
7. If the Substrate has a distinct blue color prior to use it may have been contaminated and use of such substrate can lead to compromisation of the sensitivity of the assay.
8. The plates should be read within 30 minutes after adding the Stop Solution.
9. Make a work list in order to identify the location of Standards and Samples.

Assay Procedure:

1. All reagents and components should be restored to room temperature first. It is strongly recommended that all Standards and Samples be run in duplicates or triplicates. A standard curve is required for each assay.

2. Prepare the working solution of each component of the kit according to the method described in the previous reagent preparation.

3. Take out the required strips from the aluminium foil bag, and seal the remaining strips in a self-sealing bag and put them back in the refrigerator.

4. Set standard, sample wells on the pre-coated plate respectively, and then, record the positions.

5. Add **50 ul** of different concentration of standard product to each standard well.

6. Add **50 ul of diluted sample** to be tested to the sample well and do not add blank well.

7. Pipette **100 ul Epstein-Barr Virus Capsid Antigen IgG Antibody:HRP Conjugate** to all wells except the blank wells.

8. Cover the plate with a sealer and incubate for **60 minutes** at **37°C.**

9. Aspirate and wash plate 5 times with diluted **Wash Buffer (1X)** and blot residual buffer by firmly tapping plate upside down on absorbent paper. Wipe of any liquid from the bottom outside of the microtiter wells as any residue can interfere in the reading step.

10. Pipette **100 ul TMB Substrate** to all wells.

11. Cover the plate with a sealer and incubate at **37°C** for **15 minutes in dark**.

12. Pipette **100 ul** of **Stop Solution** to all wells. The wells should turn from blue to yellow in color.

13. Read the absorbance at 450 nm with a microplate within 10-15 minutes after addition of Stop solution.

Calculation of Results:

Determine the Mean Absorbance for each set of duplicate or triplicate Standards and Samples. Using Graph Paper, plot the average value (absorbance 450nm) of each standard on the Y-axis versus the corresponding concentration of the standards on the X-axis. Draw the best fit curve through the standard points. To determine the unknown Epstein-Barr Virus Capsid Antigen IgG Antibody concentrations, find the unknown's Mean Absorbance value on the Y-axis and draw a horizontal line to the standard curve. At the point of intersection, draw a vertical line to the X-axis and read the Epstein-Barr Virus Capsid Antigen IgG Antibody Concentration.

If samples were diluted, multiply by the appropriate dilution factor. Software which is able to generate a cubic spline curve-fit or 4-PL is best recommended for automated results.

Note:
It is recommended to repeat the assay at a different dilution factor in the following cases:
- If the sample absorbance value is below the first standard.

Quality Control:

It is recommended that for each laboratory assay appropriate quality control samples in each run to be used to ensure that all reagents and procedures are correct.

Performance Characteristics of the Kit:
This kit has been validated. Please view the details herein below.

Standard Calibration Range:
12.5 ng/ml – 400 ng/ml

Sensitivity:
Limit Of Quantification:
It is defined as the lowest detectable concentration that can be determined with an acceptable repeatability and the LOQ was found to be 1.0 ng/ml.

Recycling Rate:
The recycling rate is between 85% and 115%.

Specificity:
This assay has high sensitivity and excellent specificity for detection of Epstein-Barr Virus Capsid Antigen IgG Antibody. No significant cross-reactivity or interference between Epstein-Barr Virus Capsid Antigen IgG Antibody and analogues was observed.

Recovery
The recovery rate is between 85% and 115%.

Precision:
Intra-Assay: CV<10%
Inter-Assay: CV<15%

Linearity
The correlation coefficient r value of the calibration dose response curve is greater than or equal to 0.9900.

Safety Precautions:

- **This kit is For Research Use only**. Follow the working instructions carefully.
- The expiration dates stated on the kit are to be observed. The same relates to the stability stated for reagents
- Do not use or mix reagents from different lots.
- Do not use reagents from other manufacturers.
- Avoid time shift during pipetting of reagents.
- All reagents should be kept in the original shipping container.
- Some of the reagents contain small amount of sodium azide (< 0.1 % w/w) as preservative. They must not be swallowed or allowed to come into contact with skin or mucosa.
- Source materials maybe derived from Human body fluids or organs used in the preparation of this kit were tested and found negative for HBsAg and HIV as well as for HCV antibodies. However, no known test guarantees the absence of such viral agents. Therefore, handle all components and all patient samples as if potentially hazardous.
- Since the kit contains potentially hazardous materials, the following precautions should be observed
- Do not smoke, eat or drink while handling kit material
- Always use protective gloves
- Never pipette material by mouth
- Wipe up spills promptly, washing the affected surface thoroughly with a decontaminant.
- In any case GLP should be applied with all Ratand individual regulations to the use of this kit.

Typical Example of a Work List

Well #	Contents	Absorbance at 450nm	Mean Absorbance	Interpolated Concentration
1A 2A	Blank Blank			
1B 2B	Standard No.1 Standard No.1			
1C 2C	Standard No.2 Standard No.2			
1D 2D	Standard No.3 Standard No.3			
1E 2E	Standard No.4 Standard No.4			
1F 2F	Standard No.5 Standard No.5			
1G 2G	Sample Sample			
1H 2H	Sample Sample			
3A 4A	Sample Sample			
3B 4B	Sample Sample			

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SYMBOLS KEY

MTP	**Coated Microtiter Plate (96 wells)**
STD	**Standard**
HRP CONJ	**Conjugate Horseradish Peroxidase**
SAMP DIL	**Sample Dilution**
20X WASH BUF	**(20X) Wash Buffer**
SUB TMB	**TMB Substrate**
SOLN STOP	**Stop Solution**
	**Consult Instructions for Use**
REF	**Catalog Number**
	**Expiration Date**
	**Storage Temperature**