Atlas Medical

Rubella IgG ELISA Test Kit

An enzyme immunoassay (ELISA) for the qualitative detection of IgG antibodies to Rubella in human serum or plasma.

IVD For *in vitro* diagnostic and professional use only

2°C 8°C **Store at 2-8˚C**

Σ **96 Test**

INTENDED USE

The Rubella IgG assay is an enzyme-linked immunosorbent assay (ELISA) for the in vitro qualitative determination of IgG antibodies to rubella virus in Human serum and plasma.

INTRODUCTION

Rubella is a small spherical enveloped RNA virus belonging to *Togaviridae* family. Most commonly known as the German or 3-day measles, the Rubella virus is spread through droplet infection resulting in mild contagious rash in children or young adults. In childhood, the infection is self-limited, benign disease characterized by low-grade fever, headache, lymphadenopathy, arthralgia, and conjunctivitis. However, infection during pregnancy particularly in the first trimester can lead to spontaneous abortion, intrauterine infection causing fetal death, or congenital abnormalities. Congenital rubella depends on the time the infection occurs and may result in severe complications including deafness, ocular problems including cataracts and glaucoma, congenital heart disease and mental retardation. IgM antibodies against rubella are first produced reaching detectable levels within 2-3 days and peak 14-21 days after onset of symptoms which remain detectable over the next 4-8 weeks. Diagnosis of active or recent infection may be obtained by presence of IgM antibody in single early specimen. After several days, IgG antibodies appear after IgM response and peak 14-21 days later which then persist at varying levels for life. The presence of IgG antibodies to rubella is indicative of previous infection and presumptive immunity.

The Rubella IgG ELISA Test Kit is an immunoassay for the qualitative detection of the presence of IgG antibodies to Rubella in serum or plasma specimen. The test utilizes purified Rubella antigens to selectively detect IgG antibodies to Rubella in serum or plasma.

PRINCIPLE

Indirect. Total duration of assay: **70 minutes**

Polystyrene microwell strips pre-coated with recombinant RV IgG antigens expressed in insect cells. Patient's serum or plasma sample is added, and during the first incubation step, the specific RV IgG IgG antibodies will be captured inside the wells if present. The microwells are then washed to remove unbound serum proteins.

A second set of Mouse Anti-Human IgG antibody conjugated to the enzyme Horseradish Peroxidase (HRP-Conjugate) and expressing the same epitopes as the pre-coated antigens is added, and during the second incubation, they will bind to the captured antibody.

The microwells are washed to remove unbound conjugate. Substrate solution is then added and catalyzed by this complex, resulting in a chromogenic reaction.

The resulting chromogenic reaction is measured as absorbance. The amount of color intensity can be measured and it is proportional to the amount of antibody captured in the wells, and to the sample respectively. Wells containing samples negative for RV IgG remain colorless.

MATERIALS

Materials Provided

- **Coated Microplate,** 8 x 12 strips, 96 wells.
- **Enzyme Conjugate,** (Red Cap) 1x11.0 mL/vial of HRP (horseradish peroxidase) labeled with Mouse Anti-Human IgG antobidy. Contains 0.1% ProClin300 preseRV IgGative.
- **Sample Diluent,** (White Cap) **1x11 ml/vial, ready to use.**
- **Positive Control,** (Red Cap) **1x0.2 ml/vial.**
- **Negative Control,** (Blue Cap) 1x0.2 mL/vial.
- **Wash Buffer,** (Transparent Cap) 1x25 mL/vial, (40X concentrated), PBS-Tween wash solution.
- **Substrate,** (Brown Cap) 1x11 mL/vial, ready to use, (tetramethylbenzidine) TMB.
- **Stop Solution,** (Yellow Cap) 1x6 mL/vial of 1 mol/L sulfuric acid.
- **Plate Lid: 2 Pieces**
- **One Package Insert.**

Materials Required But Not Provided

- Microplate reader with 450nm and 620nm wavelength absorbent capability.
- Microplate washer.
- Incubator.
- Plate shaker.
- Micropipettes and multichannel micropipettes delivering 50µl with a precision of better than 1.5%.
- Absorbent paper.
- Distilled water

PRECAUTIONS

- For in vitro diagnostic use only.
- Exercise the normal precautions required for handling all laboratory reagents.
- Disposal of all waste material should be in accordance with local guidelines.
- Do not use reagents beyond the labeled expiry date.
- Do not mix or use components from kits with different batch codes.
- All the specimen and reaction wastes should be considered potentially biohazard. The handling of specimens and reaction wastes should be in accordance with the local regulations and guidelines.
- The Stop Solution contains sulfuric acid, which can cause severe burns. In the event of contact with eyes, rinse immediately with plenty of water and seek medical advice.
- Neutralized acids and other liquid waste should be decontaminated by adding a sufficient volume of sodium hypochlorite to obtain a final concentration of at least 1.0%. Exposure to 1.0% sodium hypochlorite for 30 minutes may be necessary to ensure effective decontamination.
- Some reagents contain 0.05% or 0.1% ProClin 300 which may cause sensitization by skin contact, which must therefore be avoided. Reagents and their containers must be disposed of safely. If swallowed, seek medical advice immediately and show this container or label.
- Substrate has an irritant effect on skin and mucosa. In case of possible contact, wash eyes with an abundant volume of water and skin with soap and abundant water. Wash contaminated objects before reusing them. If inhaled, take the person to open air.
- For information on hazardous substances included in the kit please refer to the Materials Safety Data Sheet (MSDS), which is available on request.
- Do not smoke, drink, eat or apply cosmetics in the work area.
- Do not pipette by mouth. Wear protective clothing, disposable gloves and eye/ face protection when handling samples and reagents. Wash hands after use.
- If any of the reagents comes into contact with the skin or eyes, wash the area extensively with water.

STORAGE AND STABILITY

- Store at 2-8℃.
- Seal and return unused reagents to 2-8℃, under which conditions the stability will be retained for 2 months, or until the labeled expiry date, whichever is earlier.

SPECIMEN COLLECTION AND PREPARATION

- Human serum or plasma is recommended for this assay.
- Cap and store the samples at 18-25 ℃ for no more than 8 hours. Stable for 7 days at 2-8℃, and 1 month at -20℃. Freeze only once.
- Do not use heat-inactivated samples.
- Sediments and suspended solids in samples may interfere with the test result, which should be removed by centrifugation. Ensure that complete clot formation in serum samples has taken place prior to centrifugation.
- Avoid grossly hemolytic, lipemic or turbid samples.

Wash solution (40X dilution)

Add deionized water to the 40X concentrated Wash Solution Concentrate. Dilute 25 mL of Wash Solution Concentrate with 975 mL of deionized water to a final volume of 1000 mL. Stable for 2 months at room temperature.

PROCEDURE

Ensure the patients' samples, calibrators, and controls are at ambient temperature (18-25 ℃) before measurement. Mix all reagents through gently inverting prior to use.

- **Preparation:** Mark two wells as Negative control (e.g. B1, C1), two wells as Positive control (e.g. D1, E1) and one Blank (e.g. A1, neither samples nor HRPConjugate should be added into the Blank well). If the results will be determined by using dual wavelength plate reader, the requirement for use of Blank well could be omitted. Use only number of strips required for the test.

- **Adding Sample Diluent**: Add 100 µL of Sample Diluent into their respective wells except the Blank.
- **Adding Sample**: Add **10 µL** of Positive control, Negative control, and Specimen into their respective wells except the Blank. Mix by tapping the plate gently. Use a separate disposal pipette tip for each specimen to avoid cross-contamination.
  Note: After adding Sample, the reagents in wells turns Blue color from Green.
- **Incubating:** Cover the plate with the plate cover and incubate for **30 minutes at 37°C**.
- **Washing:** At the end of the incubation, remove and discard the plate cover. Wash each well **5 times** with diluted Wash Buffer. Each time allow the microwells to soak for **30-60 seconds**. After the final washing cycle, turn down the plate onto blotting paper or clean towel and tap it to remove any remainders.
- **Adding Conjugate:** Add 100µl of HRP-Conjugate into each well except the Blank.
- **Incubating:** Cover the plate with the plate cover and incubate for 30 minutes at 37°C.
- **Washing:** At the end of the incubation, remove and discard the plate cover. Wash each well 5 times with diluted Wash Buffer. Each time allow the microwells to soak for 30-60 seconds. After the final washing cycle, turn down the plate onto blotting paper or clean towel and tap it to remove any remainders.
- **Coloring**: Add 100 µL of TMB Substrate into each well including the Blank. Incubate the plate at Room Temperature for 10 minutes avoiding light. The enzymatic reaction between the TMB substrate and the HRP-Conjugate produces blue color in Positive control and in positive sample wells.
- **Stopping Reaction:** Using a multichannel pipette or manually, add 50 µL of Stop Solution into each well and mix gently. Intensive yellow color develops in Positive control and in positive sample wells.
- **Measuring the Absorbance:** Calibrate the plate reader with the Blank well and read the absorbance at 450nm. If a dual filter instrument is used, set the reference wavelength at 630nm. Calculate the Cut-off value and evaluate the results.
  Note: read the absorbance within 10 minutes after stopping the reaction.

QUALITY CONTROL AND CALCULATION

- Read the sample's optical density (OD) at 450nm with a micro plate reader.
- Mean negative control OD value ≤ 0.1 and positive control OD value ≥ 0.8, the test is valid, otherwise the test is invalid.
- Cut-Off value (C.O.) = Mean negative control OD value + 0.10 (Calculated by 0.05 when Mean negative control OD value is ≤ 0.05, calculated by actual value when Mean negative control OD value is > 0.05).

Positive Results: Sample O.D value ≥ C.O.

Specimens giving an absorbance equal to or greater than the Cut-Off value are considered initially reactive, which indicates that RV IgG has probably been detected using RV IgG ELISA. All initially reactive specimens should be retested in duplicates using RV IgG ELISA before the final assay results interpretation. Repeatedly reactive specimens can be considered positive for RV IgG with RV IgG ELISA.

Negative Results: Sample OD value < C.O

Specimens giving absorbance less than the Cut-Off value are negative for this assay, which indicates that no RV IgG has been detected with RV IgG ELISA, therefore the patient is probably not infected with Rubella and the blood does not contain RV IgG.

LIMITATIONS

- Positive results must be confirmed with another available method and interpreted in conjunction with the patient clinical information.
- Clinical diagnosis should not be established based on a single test result. It should integrate clinical and other laboratory data and findings.

PERFORMANCE CHARACTERISTICS

Specificity

A study of 216 individuals was tested with the ELISA kits and found that the specificity was 99.05%.

Sensitivity

Among 211 RV IgG confirmed were positive when tested with this ELISA, and 210 samples of which were detected with positive, the sensitivity was 99.52%.

Precision

Intra-assay

CV ≤ 15%

Within-run precision has been determined by using 15 replicates of three specimens: a low positive, medium positive and a high positive.

Inter-assay

CV ≤ 20%

Between-run precision has been determined by 3 independent assays on the same three specimens: a low positive, medium positive and a high positive. Three different lots of the Rubella IgG ELISA Test Kit have been tested using these specimens over a 5-day period.

Analytical specificity

Interferences are not observed up to concentrations of 0.6 mg/mL Oxalic Acid, 0.1 mg/mL Ascorbic Acid, 0.1 mg/mL Caffeine, 0.6 mg/mL Oxalic Acid, 2 mg/ mL Bilirubin, 2 mg/mL Hemoglobin, 1 % Methanol and 1% Ethanol .

Rheumatoid factors do not interfere with test .

Cross-Reactivity are not observed in Syphilis, HBsAg ,HIV,HCV ,HSV1 IgG ,Toxo IgG and CMV IgG positive specimens.

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REF	Catalogue Number		Temperature limit
IVD	In Vitro diagnostic medical device		Caution
Σ	Contains sufficient for <n> tests and Relative size		Consult instructions for use (IFU)
LOT	Batch code		Manufacturer
	Fragile, handle with care		Use-by date
	Manufacturer fax number		Do not use if package is damaged
	Manufacturer telephone number		Date of Manufacture
	Keep away from sunlight		Keep dry