Treponema pallidum IgM ELISA Kit

Catalog Number KA0969
96 assays
Version: 02

Intended for research use only
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Introduction

Intended Use

The Treponema pallidum IgM ELISA Kit is intended for the detection of IgM antibody to Treponima pallidum in human serum of plasma.

Background

Treponema pallidum is the causative agent of syphilis a contagious and infectious systemic disease characterized by periods of active florid manifestations and by years of symptomless latency. Syphilis is traditionally classified as acquired or congenital, each being further subdivided on the basis of the natural course of the disease. In acquired syphilis, infection is usually transmitted by sexual intercourse. The incubation period of syphilis can vary from 1 to 13 weeks, but usually from 3-4 weeks. Untreated patients with primary or secondary syphilis having active lesions are the most infectious, and the risks of contagion are greatest during the first 2 years of infection. Virtually every organ and tissue of the body is affected, including most body fluids. Over 80% of patients have mucocutaneous lesions, 50% have generalized enlargement of the lymph nodes, and about 10% have lesions of the eyes, bones and joints, meninges, liver, and spleen. Mild constitutional symptoms of malaise, headache, anorexia, nausea, aching pains in the bones, and fatigability are often present. Congenital syphilis is the result of passage of T. pallidum across the placenta. Clinical manifestations may be present at birth but are more often seen at 3 weeks to 6 months of age. Two types of antibodies are produced by T. pallidum: nontreponemal antibodies (reagin) and treponemal antibodies. ELISA for detection of IgG and IgM antibodies is becoming the Gold standard for the diagnosis of syphilis.

Principle of the Assay

Diluted patient serum (serum diluent contains sorbent to remove Rheumatoid Factor and human IgG interference) is added to wells coated with purified antigen. IgM specific antibody, if present, binds to the antigen. All unbound materials are washed away and the enzyme conjugate is added to bind to the antibody-antigen complex, if present. Excess enzyme conjugate is washed off and substrate is added. The plate is incubated to allow the hydrolysis of the substrate by the enzyme. The intensity of the color generated is proportional to the amount of IgM specific antibody in the sample.
General Information

Materials Supplied

List of component

<table>
<thead>
<tr>
<th>Component</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microwells coated with T. pallidum antigen</td>
<td>12x8x1</td>
</tr>
<tr>
<td>Sample Diluent: ready to use</td>
<td>22 ml</td>
</tr>
<tr>
<td>Calibrator: ready to use</td>
<td>1 ml</td>
</tr>
<tr>
<td>Positive Control: ready to use</td>
<td>1 ml</td>
</tr>
<tr>
<td>Negative Control: ready to use</td>
<td>1 ml</td>
</tr>
<tr>
<td>Enzyme conjugate: ready to use</td>
<td>12 ml</td>
</tr>
<tr>
<td>TMB Substrate: ready to use</td>
<td>12 ml</td>
</tr>
<tr>
<td>Stop Solution: ready to use</td>
<td>12 ml</td>
</tr>
<tr>
<td>Wash concentrate 20X</td>
<td>25 ml</td>
</tr>
</tbody>
</table>

Storage Instruction

✓ Store the kit at 2-8°C.
✓ Keep microwells sealed in a dry bag with desiccants.
✓ The reagents are stable until expiration of the kit.
✓ Do not expose reagent to heat, sun, or strong light.

Materials Required but Not Supplied

✓ Distilled or deionized water
✓ Precision pipettes
✓ Disposable pipette tips
✓ ELISA reader capable of reading absorbance at 450 nm
✓ Absorbance paper or paper towel
✓ Graph paper

Precautions for Use

✓ Precautions
1. Potential biohazardous materials:

   The calibrator and controls contain human source components which have been tested and found non-reactive for hepatitis B surface antigen as well as HIV antibody with FDA licensed reagents. However, as there is no test method that can offer complete assurance that HIV, Hepatitis B virus or
other infectious agents are absent, these reagents should be handled at the Biosafety Level 2, as recommended in the Centers for Disease Control/National Institutes of Health manual, "Biosafety in Microbiological and Biomedical Laboratories." 1984.

2. This test kit is designed for Research Use Only.

3. Optimal results will be obtained by strict adherence to this protocol. Precise pipetting, as well as following the exact time and temperature requirements prescribed are essential.

4. Do not pipette by mouth. Do not smoke, eat, or drink in the areas in which specimens or kit reagents are handled.

5. The components in this kit are intended for use as an integral unit. The components of different lots should not be mixed.

6. Control sera and sample diluent contain preserved with sodium azide. Sodium azide may react with lead and copper plumbing to form explosive metal azide. On disposal, flush with a large volume of water.

✔ Limitations of the Test

1. To enhance sensitivity and specificity of this IgM test provided sample diluent has been formulated to block IgG and Rheumatiod Factor (RF) interferences. Turbidity could be seen after diluting serum with sample diluent. This turbidity is due to the blocking of serum IgG and has shown no interference with test results. It can be removed by centrifugation.

2. In specimens with high RF and high autoimmune antibodies, the possibility of eliminating the interferences cannot be ruled out entirely.

3. Lipemic or hemolyzed samples may cause erroneous results.
Assay Protocol

**Reagent Preparation**

Prepare 1X Wash buffer by adding the contents of the bottle (25 ml, 20X) to 475 ml of distilled or deionized water. Store at room temperature (18-26°C).

**Sample Preparation**

1. Collect blood specimens and separate the serum.
2. Specimens may be refrigerated at 2-8°C for up to seven days or frozen for up to six months. Avoid repetitive freezing and thawing.

**Assay Procedure**

Bring all specimens and kit reagents to room temperature (18-26°C) and gently mix.

1. Place the desired number of coated strips into the holder.
2. Negative control, positive control, and calibrator are ready to use. Prepare 1:21 dilution of test samples, by adding 10 µl of the sample to 200 µl of sample diluent. Mix well.
3. Dispense 100 µl of diluted sera, calibrator and controls into the appropriate wells. For the reagent blank, dispense 100 µl sample diluent in 1A well position. Tap the holder to remove air bubbles from the liquid and mix well. Incubate for 20 minutes at room temperature.
4. Remove liquid from all wells. Wash wells three times with 300 µl of 1X wash buffer. Blot on absorbance paper or paper towel.
5. Dispense 100 µl of enzyme conjugate to each well and incubate for 20 minutes at room temperature.
6. Remove enzyme conjugate from all wells. Wash wells three times with 300 µl of 1X wash buffer. Blot on absorbance paper or paper towel.
7. Dispense 100 µl of TMB substrate and incubate for 10 minutes at room temperature.
8. Add 100 µl of stop solution.
9. Read O.D. at 450 nm using ELISA reader within 15 min. A dual wavelength is recommended with reference filter of 600-650 nm.
Data Analysis

Calculation of Results

1. Check Calibrator Factor (CF) value on the calibrator bottle. This value might vary from lot to lot. Make sure you check the value on every kit.
2. Calculate the cut-off value: Calibrator OD x Calibrator Factor (CF).
3. Calculate the Ab (Antibody) Index of each determination by dividing the O.D. value of each sample by cut-off value.

✓ Example of typical results:
   Calibrator mean OD = 0.8
   Calibrator Factor (CF) = 0.5
   Cut-off Value = 0.8 x 0.5 = 0.400
   Positive control O.D. = 1.2
   Ab Index = 1.2 / 0.4 = 3
   Patient sample O.D. = 1.6
   Ab Index = 1.6 / 0.4 = 4.0

✓ Quality Control
   The test run may be considered valid provided the following criteria are met:
   1. The O.D. of the Calibrator should be greater than 0.250.
   2. The Ab index for Negative control should be less than 0.9.
   3. The Ab Index for Positive control should be greater than 1.2.

✓ Interpretation
   The following is intended as a guide to interpretation of Toxoplasma IgM test results; each laboratory is encouraged to establish its own criteria for test interpretation based on sample populations encountered.

✓ Antibody Index Interpretation
   <0.9 No detectable antibody to Treponema pallidum IgM by ELISA.
   0.9-1.1 Borderline positive. Follow-up testing is recommended if clinically indicated.
   >1.1 Detectable antibody to Treponema pallidum IgM by ELISA.
Performance Characteristics

✓ Sensitivity and Specificity

76 sera were tested by this Treponema pallidum IgM ELISA and a reference ELISA method. 12 sera were positive and 59 were negative by both methods (93% agreement). The results are summarized below:

<table>
<thead>
<tr>
<th>Reference ELISA Kit</th>
<th>+</th>
<th>-</th>
<th>Total</th>
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</thead>
<tbody>
<tr>
<td>+</td>
<td>12</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>-</td>
<td>2</td>
<td>59</td>
<td>61</td>
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<tr>
<td>Total</td>
<td>14</td>
<td>62</td>
<td>76</td>
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</table>

✓ Precision

• Intra-Assay Study

<table>
<thead>
<tr>
<th>Serum</th>
<th>No. of Replicates</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Coefficient of Variation %</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>16</td>
<td>1.34</td>
<td>0.094</td>
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<tr>
<td>2</td>
<td>16</td>
<td>1.17</td>
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<td>3</td>
<td>16</td>
<td>0.23</td>
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• Inter-Assay Study

<table>
<thead>
<tr>
<th>Serum</th>
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<th>Standard Deviation</th>
<th>Coefficient of Variation %</th>
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<td>1.44</td>
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<td>10</td>
<td>0.24</td>
<td>0.025</td>
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Resource

Reference


### Plate Layout

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