EXPECTED RESULTS AND PERFORMANCE CHARACTERISTICS

Detectable levels of the IM heterophil antibody can usually be expected to occur between the sixth and tenth day following the onset of symptoms. The level usually increases through the second or third week of illness and, thereafter, can be expected to persist with gradual decline over a 12-month period. Positive results should be seen in approximately 98% of all IM cases. False negative and false positive rates of 2% and 6-13% respectively, are to be expected. In a clinical study involving more than 500 tests, the ASI Color Mono II Test showed 100% correlation with another commercial product.

REFERENCES


ABSTRACT

Infectious mononucleosis involves the reticuloendothelial tissue and is believed to be caused by the Epstein-Barr virus. It is generally limited to and affects children and young adults. Infectious mononucleosis may be confused on a symptomatic basis with other diseases. Detectable levels of unique heterophil antibodies are produced in patients with infectious mononucleosis. The antibody of IM was shown by Paul and Bunnell to agglutinate sheep and horse erythrocytes and Bunnell subsequently attempted to use this observation as a basis of screening. The antibody of IM was shown by Paul and Bunnell to agglutinate sheep and horse erythrocytes and Bunnell subsequently attempted to use this observation as a basis of screening.
1. Preparing for the Test Procedure

   a. Ensure all reagents and samples are warmed to room temperature (20-30°C) before use. Remove reagents from foam holders. Do not heat reagents in a water bath.
   b. All reagents are ready for use as supplied. Gently mix the reagents before use to ensure homogeneity.
   c. Gently shake the Erythrocyte Reagent before each use to ensure homogeneity.

2. ASSAY PROTOCOL – QUALITATIVE

   a. Using the stirrer pipets, deliver one free-falling drop (0.05 ml) of each sample onto a separate circle on the test card. Use a fresh pipet for each sample. When using the stirrer pipet, keep it in a vertical position to ensure accurate delivery. Repeat by adding one free-falling drop of REACTIVE or NONREACTIVE CONTROL from the dropper vials supplied. Note the location of each sample by using the numbers located below and to the left of each circle.
   b. Shake the vial of Dyed, Color-Enhanced Horse Erythrocytes gently to uniformly mix the suspension. Add one free-falling drop of reagent to each control and sample.
   c. Using the flat end of the stirrer pipets, mix each sample and reagent and spread over the entire circle.
   d. Gently rotate the card for 2 minutes. Observe for agglutination under high intensity light. All test results should be compared to both REACTIVE and NONREACTIVE CONTROLS.

3. Interpretation of Results – Qualitative

   REACTIVE: Any degree of agglutination or rimming within the test area as compared to the nonreactive control.
   NONREACTIVE: Smooth or finely granular suspension with no visible agglutination.

4. Limitations of the Procedure

   a. In accord with all diagnostic methods, a final diagnosis should not be made on the results of a single test, but should be based on a correlation of test results with other clinical findings.
   b. Contaminated, lipemic, or grossly hemolyzed sera should not be used because of the possibility of nonspecific results.
   c. Reaction times longer than specified might cause false positive results due to a drying effect.
   d. Due to possible prozone effects, the strength of agglutination in the screening test is not indicative of the IM heterophil antibody titer.
   e. False negative results have been reported. Some of these may represent cases of IM which persistently remain sero-negative for the IM heterophil antibody.11 However, some false negative results have been shown to be due to a delayed IM heterophil antibody response.12
   f. IM heterophil antibody titers have been shown to persist in some cases for months and years after clinical symptoms have subsided.13 Conversely, IM heterophil antibodies have been detected prior to the onset of clinical symptoms.14
   g. Thus, caution should be exercised in the interpretation of test results.
   h. Patients with exceptionally high levels of the serum sickness heterophil antibody may test falsely positive for the IM heterophil. These patients are generally found only in countries where "horse serum is used prophylactically".15
   i. The IM heterophil has been associated with several diseases other than IM.16 These include leukemia, Burkitt’s lymphoma, pancreatic carcinoma, viral hepatitis, cytomegalovirus infections and others. In these cases, it is difficult to disprove the possibility of concurrent disease states.17

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**Materials Provided:**

<table>
<thead>
<tr>
<th></th>
<th>25 Tests</th>
<th>50 Tests</th>
<th>100 Tests</th>
<th>1000 Tests</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dyed, Color-Enhanced Horse Erythrocyte Reagent</td>
<td>1.0 ml</td>
<td>2.0 ml</td>
<td>2 x 2.0 ml</td>
<td>20 x 2.0 ml</td>
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<tr>
<td>Reactive Control</td>
<td>0.5 ml</td>
<td>1.0 ml</td>
<td>1.0 ml</td>
<td>10 x 1.0 ml</td>
</tr>
<tr>
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<td>1.0 ml</td>
<td>10 x 1.0 ml</td>
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<tr>
<td>0.05 ml Disposable Stirrer Pipets</td>
<td>25</td>
<td>50</td>
<td>100</td>
<td>1000</td>
</tr>
<tr>
<td>Test Card (6-well)</td>
<td>5</td>
<td>9</td>
<td>17</td>
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**Handling and Procedural Notes**

1. In order to obtain reliable and consistent results, the instructions in the package insert must be strictly followed. Do not modify the handling and storage conditions for reagents or samples.
2. Do not use past the expiration date indicated on the kit.
3. Do not interchange components of one kit with those of another kit.
4. Do not use past the expiration date indicated on the kit.
5. Do not modify the handling and storage conditions for reagents or samples.
6. In order to obtain reliable and consistent results, the instructions in the package insert must be strictly followed. Do not modify the handling and storage conditions for reagents or samples.

**Storage Instructions**

Store all reagents at 2-8°C in an upright position when not in use. Do not freeze reagents. Pipets and cards do not require refrigeration.

**Indications of Deterioration**

1. Turbiditiy or precipitation in controls is indicative of deterioration and the component should not be used.
2. Bacterial contamination of reagents or specimens may cause false positive results.

**SPECIMEN COLLECTION AND STORAGE**

1. Use serum samples and plasma specimens containing EDTA (an anticoagulant). Plasma specimens should be from tubes which have been collected with adequate volume to provide the appropriate proportions of specimen to anticoagulant.
2. Separate the serum or plasma as soon as possible after collection and store at 2-8°C until testing can be performed.
3. If testing is not to be carried out within 72 hours, the serum and plasma should be stored at 2-8°C or below until testing.
4. It is not necessary to inactivate the serum or plasma by heat before testing.

**PERFORMANCE OF THE TEST**

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**Additional Materials Required**

1. Test tubes 12 x 75 mm (dilutions)
2. Timer
3. Volumetric pipets for dilutions
4. Saline (0.85% NaCl solution)
5. High intensity light of lamp

**TEST PROCEDURE**

**Preparation for the Assay**

1. Allow all reagents and samples to warm to room temperature (20-30°C) before use. Remove reagents from foam holders. Do not heat reagents in a water bath.
2. All reagents are ready for use as supplied. Gently mix the reagents before use to ensure homogeneity.
3. Gently shake the Erythrocyte Reagent before each use to ensure homogeneity.

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**LIMITATION OF THE PROCEDURE**

1. For each test specimen to be titrated, label 5 test tubes (12 x 75 mm).
2. To each tube add 0.2 ml physiological saline.
3. To tube No. 1 add 0.2 ml of undiluted test sample.
4. Serially make two-fold dilutions by mixing contents of tube No. 1 with a pipet and transferring 0.2 ml to tube No. 2. Repeat serial transfers for each tube. For the five tubes, the dilution range is from 1:2 to 1:32.
5. If required, additional sample dilutions can be added.
6. Proceed with step 2 as in the qualitative procedure.

**QUALITY CONTROL**

Quality control requirements must be performed in accordance with applicable local, state, and/or federal regulations or accreditation requirements and your laboratory’s standard Quality Control Procedures. Controls with graded reactivity should be included. If control samples do not yield the expected response, the assay should be considered invalid and the assay repeated. If the repeat assay does not elicit the expected results for the control samples, discontinue use of the kit and contact Technical Support at 800.654.0146.

**INTERPRETATION OF RESULTS – SEMIQUANTITATIVE**

**QUALITY CONTROL**

Quality control requirements must be performed in accordance with applicable local, state and/or federal regulations or accreditation requirements and your laboratory’s standard Quality Control Procedures. Controls with graded reactivity should be included. If control samples do not yield the expected response, the assay should be considered invalid and the assay repeated. If the repeat assay does not elicit the expected results for the control samples, discontinue use of the kit and contact Technical Support at 800.654.0146.

**INTERPRETATION OF RESULTS – QUALITATIVE**

The highest dilution in which visible agglutination occurs is considered the endpoint titer. The sensitivity of the ASI Color Mono II Test is adjusted such that positive reactions will occur with serum or plasma samples that have guinea pig kidney absorbed Davidsohn sheep cell titers of 1:28. A guinea pig kidney absorbed Davidsohn sheep cell titer can be approximated by multiplying the observed titer by 28.