

Detection of Streptococcal Antibodies Using the Streptozyme Test

Objectives:

1. Follow instructions of the reagent package insert to select and evaluate appropriate specimens for Streptozyme testing.
2. Perform the hemagglutination test for the detection of antibodies to extracellular Group A Streptococcus to obtain control and patient results that match instructor values with 100% accuracy.
3. State the causative agent of Strep throat.
4. List 4 disease processes related to Streptococcal infections
5. Evaluate reagent package inserts to determine the substance being analyzed, the principle of the procedure, antigens used to sensitize the reagent red blood cells, the expected value, significance of abnormal results, sensitivity of the test in comparison to the ASO titer, limitations of the procedure, and troubleshooting procedures to follow if control results are unacceptable.
6. Appropriately record and report results as instructed, including the correct units for this kit.
7. Utilize lecture notes, textbook and laboratory (including product insert) information to answer study questions.

Introduction:

During the course of exposure and infection by Group A streptococcal organisms (*Streptococcus pyogenes*), extracellular products/exoantigens of the bacteria act as antigens to which the body responds by producing specific antibodies. Patient produce antibodies in response to the Group A streptococcus antigens including some of the classical exoenzymes such as:

Streptolysin O (SLO)- One of two hemolysins (other being Streptolysin S). SLO is oxygen labile and has direct toxic effects on heart and red blood cells. In the course of a streptococcal infection, it stimulates the production of specific anti-streptolysin antibodies, which in-vitro, neutralize the hemolytic properties of the antigen, SLO.

DNase

hyaluronidase

nicotinamide adenine dinucleotidase (NADase)

streptokinase

Detection and quantitation of antibodies produced in response to streptococcal exoantigens is useful in the investigation of disease processes related to streptococcal infections including streptococcal pharyngitis, rheumatic fever, pyoderma and glomerulonephritis. Both acute rheumatic fever and post-streptococcal glomerulonephritis are believed to be autoimmune responses involving cross reaction of the body's antibody response to streptococcal antigens. In rheumatic fever, myosin of the heart muscle is damaged while the glomerular basement membrane is affected in post-streptococcal glomerulonephritis.

Principle:

When Streptozyme reagent containing a suspension of aldehyde-fixed sheep cells sensitized with classical Streptococcus A extracellular and exoenzyme antigens is mixed with patient serum containing antibodies to the antigens, a positive agglutination reaction will occur. The Streptozyme test detects more positive specimens than any single test for streptococcal exoenzyme antibodies. The test detects anti-streptolysin O, anti-DNASE, anti-hyaluronidase, and anti-streptokinase. Research has shown that a serum specimen giving a positive Streptozyme test performed using the standard 1:100 dilution will demonstrate at least an ASO titer of 166 Todd Units. Manufacturer claims that practically no sera with an elevated ASO titer can be missed by the properly performed Streptozyme test. Cholesterol and beta-lipoproteins may cause falsely increased ASO test titers, but do not interfere with the Streptozyme test.

Review the principle of the specific kit being used in this laboratory.

Materials:

1. STREPTOZYME test kit.
2. Patient and control serum specimens.
3. Timer
4. Other materials as directed by reagent product insert(s).

Procedure:

See reagent product insert(s).

Interpretation:

Positive sera show readily visible hemagglutination while negative sera are uniformly turbid or slightly granular. Report as Streptozyme positive, or Streptozyme negative.

In the titration procedure, the reciprocal of the last dilution to show positive agglutination is the STZ titer and should be reported in STZ units. Consult the reagent product insert(s) for specific information.

Expected Results:

Consult the reagent product insert(s) for interpretation.

Precautions:

1. Prior to use, remove Reagent bottle screw cap and insert dropper into the bottle.
2. Reagents and specimens must be at room temperature.
3. Use new stirrer for each sample. Do not touch end of stirrer used for mixing.
4. Glass reaction slide should be washed with detergent after each use and rinsed thoroughly and dried with a lint-free tissue.
5. **Review the product insert the specific kit being used in this laboratory for additional information.**

Name _____ Date _____

10.STREPTOZYME TEST

Test Kit Name _____ Lot Number _____
Manufacturer _____ Expiration Date _____

Patient Name and Identification Number	Report as "Pos" or "Neg"
	Result
Positive Control	
Negative Control	
1.	
2.	

Name _____ Date _____

10. STREPTOZYME TEST

1. Based on the results obtained should these results be reported out on the patient samples: YES NO
2. List the 5 specific antigens that the red blood cells are sensitized with.
3. List 2 patient samples which may be used with this test kit.
4. Briefly state the principle (what reacts with what to give a positive reaction) of the procedure of this test kit, including appearance of positive result.
5. Titers may be performed with the Streptozyme kit, state the units this titer is reported out in.
6. State why this procedure is more sensitive than the ASO titer
7. List the genus and species of the organism which causes “Strep throat”.
8. List 4 diseases caused by this organism.