

5. LATEX AGGLUTINATION TEST

Aim:

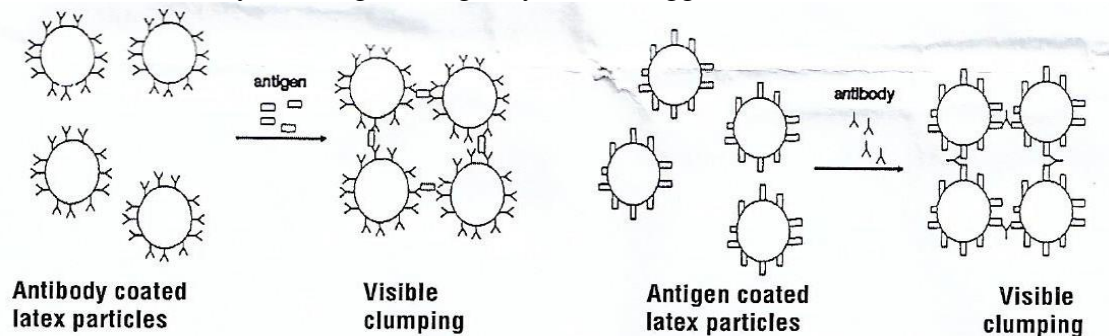
To learn the technique of latex agglutination.

Introduction:

Agglutination is a reaction of clumping together of antigen-bearing cells, microorganisms or particles in the presence of specific antibodies (agglutinins) in a suspension. Reaction time for agglutination to occur is shorter compared to other antigen-antibody interactions. Latex agglutination makes use of latex particles which are built from different organic materials to a desired diameter, and may be functionalized with chemical groups to facilitate attachment of molecules. Latex agglutination tests have been in use since 1956 to detect a wide range of analytes in the clinical laboratory. The first description of a test based on latex agglutination was the ‘Rheumatoid Factor Test’ proposed by Singer and Plotz in 1956. It can be used for detection of both antigen and antibody.

Principle:

In latex agglutination, antibodies are adsorbed to the latex particles (under appropriate ionic and alkaline pH conditions) by binding to the Fc region of antibodies leaving Fab region free to interact with antigen present in the applied specimen. The use of smaller latex particle has improved the sensitivity and reagent longevity of latex agglutination.



Applications of Latex Agglutination Tests:

Latex agglutination tests are very popular in clinical laboratories. These tests are applied to the detection of many infectious diseases.

- To detect microbial and viral infections, autoimmune diseases, hormones, drugs and serum proteins.
- To check for certain antibodies or antigens in a variety of bodily fluids including saliva, urine, cerebrospinal fluid, and blood.

Material required:

Sl No.	Materials	Remarks
1	Antigen Solution- Solution A	Materials provided in Hiper® Latex Agglutination kit *
2	Negative Control- Solution B	
3	Positive Control- Solution C	
4	Disposable Agglutination Cards	
5	Disposable Mixing Sticks	

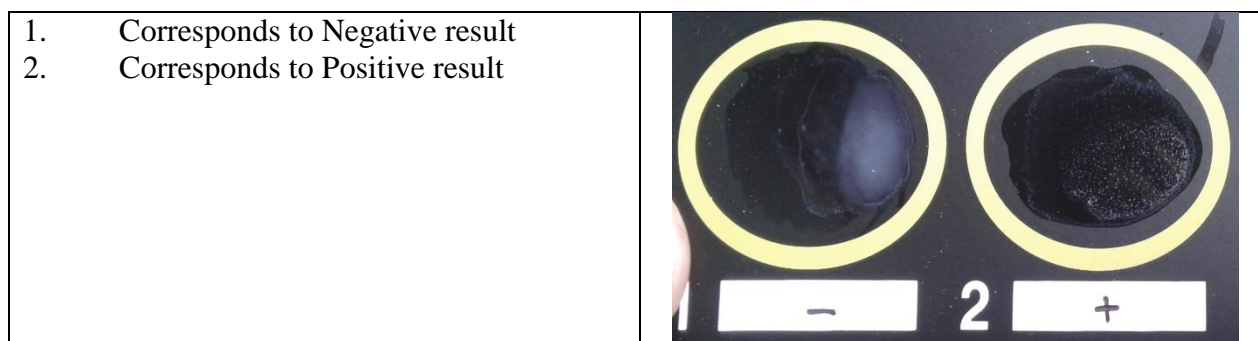
* In this kit three solutions are provided, i.e. Antigen solution, Negative control & Positive control. The Antigen solution (preserved with 0.099% sodium azide) contains inactivated antigens reactive with Test reagent and non-reactive with Control reagent. The Negative control contains latex particles coated with non-specific antibodies preserved in 0.099% sodium azide. The Positive control contains latex particles coated with specific antibodies preserved in 0.099% sodium azide.

Procedure:

1. Before starting the experiment, gently mix all the bottles provided in this kit.
2. Add 1 drop of Solution A (25µL) into the circles marked as 1 and 2 of a clean dry agglutination card.
3. Add 1 drop of Solution B (25µL) into circle 1.
4. Add 1 drop of Solution C (25µL) to circle 2.
5. Spread the drops over the area of both the circles using fresh mixing stick for each circle.
6. Rock the card gently (approximately two to three minutes) and observe for agglutination. An agglutination reaction is indicated by visible aggregation of the latex particles.
7. The circles marked as 3, 4 and 5, 6 can be used similarly
8. After performing the experiment, discard the slides and mixing sticks.

Observation and Result:

After mixing the Antigen Solution with Positive control and Negative control separately observe for the agglutination reaction.



Interpretation:

The results can be interpreted as follows:

<i>Circle Number</i>	<i>Test</i>	<i>Interpretation</i>
1	Negative	No Agglutination seen
2	Positive	Agglutination seen

- For circle 1, the inactivated antigens of the Antigen solution do not bind to the latex particles coated with non-specific antibodies of the Negative control. Hence, no agglutination is seen.

- For circle 2, the inactivated antigens of the Antigen solution bind to the latex particles coated with specific antibodies of the Positive control. Hence, agglutination is seen.

Observation and Result:

