agglutination reaction

- Agglutination is the visible expression of the aggregation of antigens and antibodies. Agglutination reactions apply to particulate test antigens that have been conjugated to a carrier.

- Agglutination tests are easy to perform and in some cases are the most sensitive tests currently available. These tests have a wide range of applications in the clinical diagnosis of non-infectious immune disorders and infectious disease.

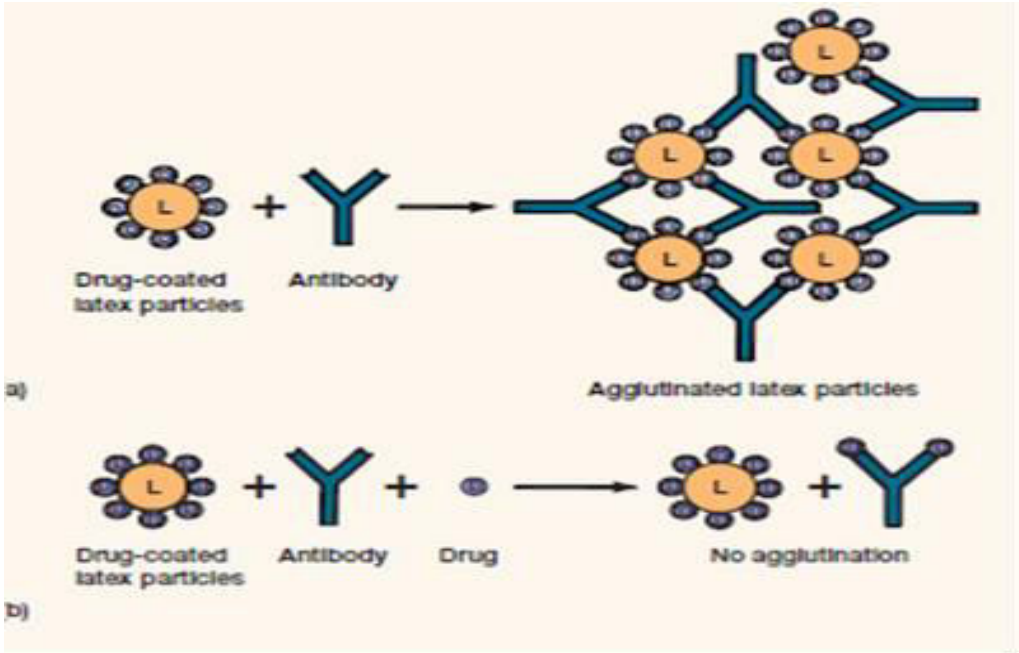
- The carrier could be artificial (such as latex or charcoal particles) or biological (such as red blood cells). These conjugated particles are reacted with patient serum presumably containing antibodies. The endpoint of the test is the observation of clumps resulting from that antigen-antibody complex formation.

- The quality of the result is determined by the time of incubation with the antibody source, amount and avidity of the antigen conjugated to the carrier, and conditions of the test environment (e.g., pH and protein concentration).

- Various methods of agglutination are used in diagnostic immunology and these incude latex agglutination, flocculation tests, direct bacterial agglutination, and hemagglutination.

- In latex agglutination, many antibody molecules are bound to latex beads (particles), which increases the number of antigen-binding sites. If an antigen is present in a test specimen, it will bind to the antibody and form visible, cross-linked aggregates.

- Latex agglutination can also be performed with the antigen conjugated to the beads for testing the presence of antibodies in a serum specimen.



- Flocculation tests are designed for antibody detection and are based on the interaction of soluble antigens with antibodies, producing a precipitate of fine particles that can be seen with the naked eye.

- Direct bacterial agglutination uses whole pathogens as a source of antigen. It measures the antibody level produced by a host infected with that pathogen. The binding of antibodies to surface antigens on the bacteria results in visible clumps.

- Hemagglutination uses erythrocytes as the biological carriers of bacterial antigens, and purified polysaccharides or proteins for determining the presence of corresponding antibodies in a specimen .

- Hemagglutination assay
- Red blood cells are used as carriers to detect antibodies from a patient's serum.

- Precipitation Reactions- Interaction of soluble antigens with IgG or IgM antibodies. Precipitation ring test performed in small tube.
- Immunodiffusion procedures: precipitation reactions carried out in agar gel medium.
- When optimal proportions of antigens and antibodies $\Rightarrow$Lattice formation.
- Excess of either component decreases lattice formation and subsequent precipitation.