The antiglobulin or Coombs test:

The antiglobulin test detects antibodies that coal RBCs (sensitized RBCs) and these antibodies are usually of IgG type which react with RBCs without causing agglutination.

The antihuman globulin produced in the rabboit after injecting the rabbit with human serum.

In the coombs test the antibody –coated red cells are reacted with a second antibody directed against the antibody already on the cells. This second antibody (antihuman globulin, AHG) cross-links the antibody on different cells producing agglutination.

There are two of coombs test:

1-The direct antiglobulin test (DAT), in which the coating of the RBCs sensitization has taken place in the body (in vivo) before the blood is taken.

So DAT is used to detect antibodies that react with the RBCs in the body. Such as in Auto immune hemolytic anemia(AND) and in hemolytic transfusion reaction due to incompatible blood transfusion.

In DAT, the red cells must be washed with normal saline to remove any unattached antibodies before the addition AHG, otherwise, the results will be false –ve.

2-The indirect Antiglobulin Test(IAT) in which the coating of the rad cells is done by incubating the red cells (of normal person) with the serum (of patient) at 37°C. The red cells are then washed with normal saline and AHG is added, if coating has been taken place, the agglutination will occur.

The IAT is used to:

1-Detects antibodies in the serum

2-Detects antigens on red cells (blood grouping).

3-Detects antigen/antibody pairs in donor red cell/recipient.

Perform antibody screening and identification.

Types AHG reagents:

1-Polyspecific (broad-spectrum) AHG:

This contains rabbit antihuman –IgG and antihuman complement. This type is suitable for routine use in blood banks, because the majority of clinically significant antibodiesare IgG, so anti-IgG is an essential component of any polyspecific reagent.

The anti-complement component is needed for the detection of occasional examples of well complement-binding antibodies, and for the detection of in vivo complement coating of red cells.

2-Monospecific reagents:

These can be prepared against the heavy chains of IgG, IgM, IgA, and C3. These may be useful in investigating AIHA.

Compatibility testing:

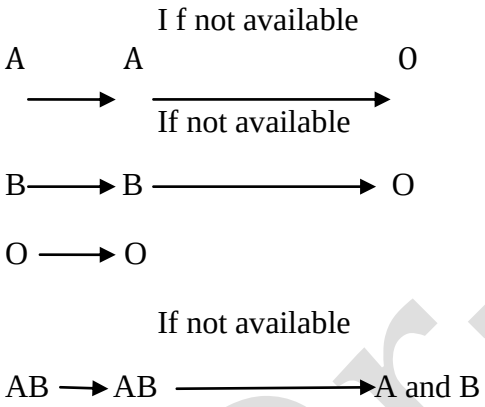
Definition:

In vitro demonstration of serological compatibility between the prospective recipients (patients) serum and donors red cells.

The aim is the prevention of hemolytic transfusion reactioin caused by the administration of incompatible blood. Compatibility testing should be carried out within 48 hours before administration of blood to the patient.

Group specific blood:

Blood of the same BO group as that of the recipient, is selected for transfusion. When group specific blood is unavailable, then blood of other groups may be selected provided that it is compatible



In general, Rh + recipient should receive Rh+ blood and Rh -ve recipient must receive Rh –ve blood.

Principle of the technique:

Compatibility is tested by incubating recipient's serum and donor's red cells (the major cross

match). A control, recipient's own serum and red cells are also incubated. The absence of agglutination in both tests indicated that a gross error in the ABO grouping of the recipient and donor has not been made and that the presence of allo-or autoantibodies in the recipient serum is unlikely. The donor's cells may be prepared in several ways for presentation to the recipient's serum and a combination of the following methods is generally used.

1- The red cells may be suspended in saline at room temperature.
1- The cells may be suspended in albumin and tested at 37°C.
2- The indirect antiglobulin test which is the most sensitive test for detecting IgG antibodies.