

Immunology Lab.# 4

Blood cross matching

Important step before blood transfusion in order to prevent transfusion reaction with serious complication and to show compatibility between donors' blood and recipient blood.

Types

1- Major cross matching

2- Minor cross matching

1- Major cross matching

Procedure

1. Prepare **Donor's red cells (tube with EDTA) and recipient's serum (Gel tube)**.
2. Prepare 5% saline cell suspension of red cells (50 μ l blood + 950 μ l Normal saline).
3. Add two drops of recipient's serum and one drop of donor cell suspension.
4. Mix and incubate the tubes at 37 C for about 45-60 minutes.
5. Decant the serum completely and wash the cells three times in saline.
6. Add two drops of Anti-human Globulin (AHG) and mix. Allow to stand at room temperature for 5 minutes.
7. Centrifuge at 1500 rpm for 1 minute.
8. Observe macroscopically and microscopically for agglutination.
9. If macroscopic agglutination is not observed, transfer a small amount onto a glass slide and examine for microscopic agglutination. Rouleaux is not an indication of incompatibility.

Results

No agglutination (compatible)-Can be transfused

Agglutination (Incompatible)- Cannot be transfused

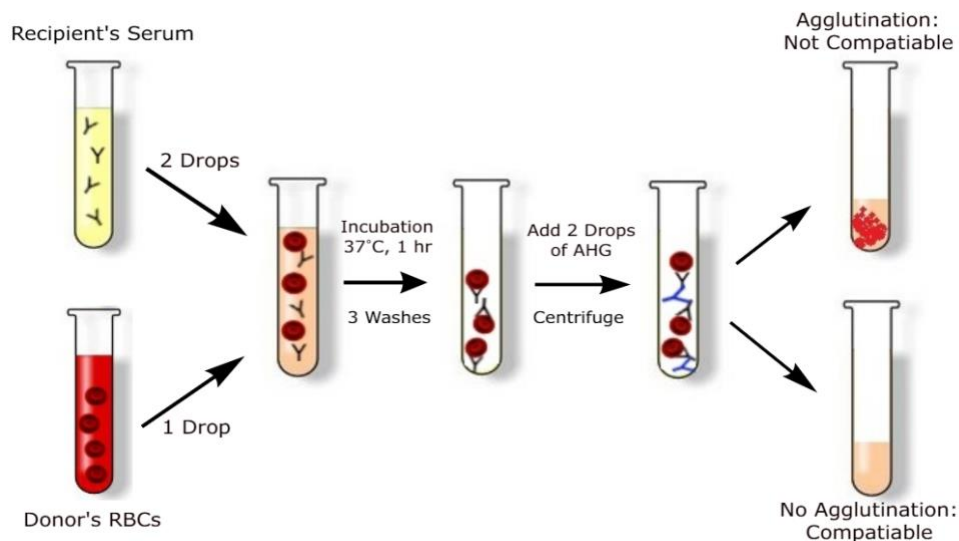


Fig.1 Major cross-matching

Procedure of minor cross matching

1. Recipient's red cells and donor's serum/plasma.
2. Add two drops of donor's serum and one drop of recipient's cell suspension. (50 μ l blood + 950 μ l Normal saline).
3. Mix and incubate the tubes at 37 C Celsius for about 60 minutes.
4. Decant the serum completely and wash the cells three times in saline.
5. Add two drops of Anti-human Globulin (AHG) and mix. Allow to stand at room temperature for 5 minutes.
6. Centrifuge at 1500 rpm for 1 minute.
7. Observe macroscopically and microscopically for agglutination.
8. If macroscopic agglutination is not observed, transfer a small amount onto a glass slide and examine for microscopic agglutination. Rouleaux is not an indication of incompatibility.

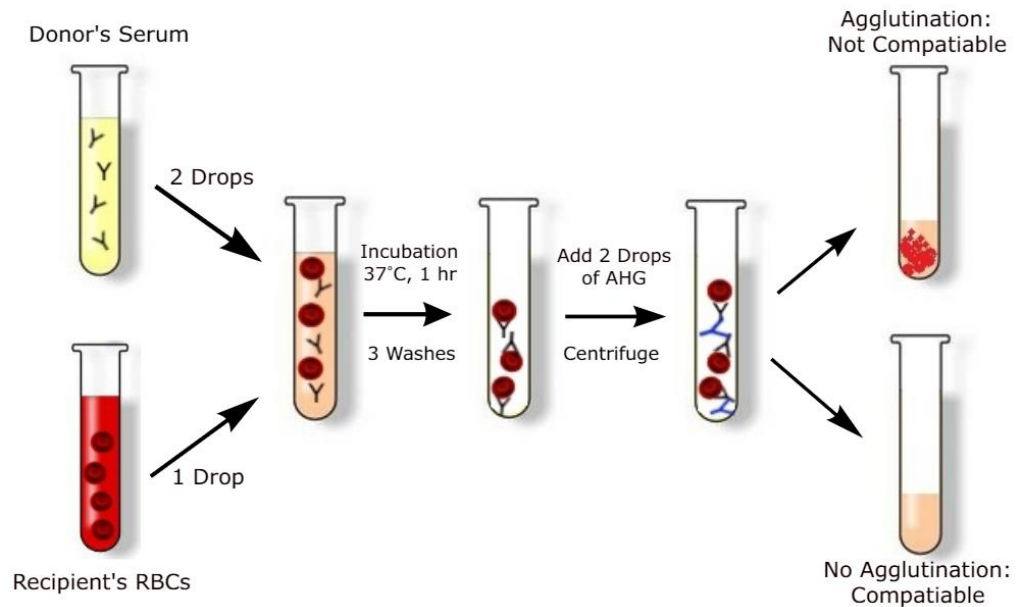


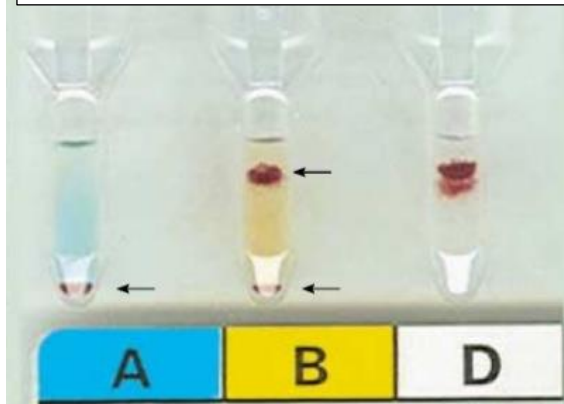
Fig.2 Minor cross-matching

The minor incompatibility is **less important** because the donor's serum which contains the antibodies is diluted in the recipient's own plasma, making the antibodies very dilute and ineffective.

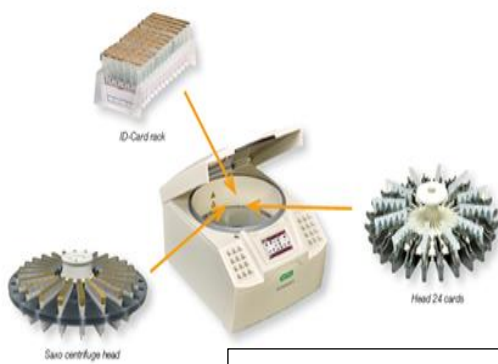
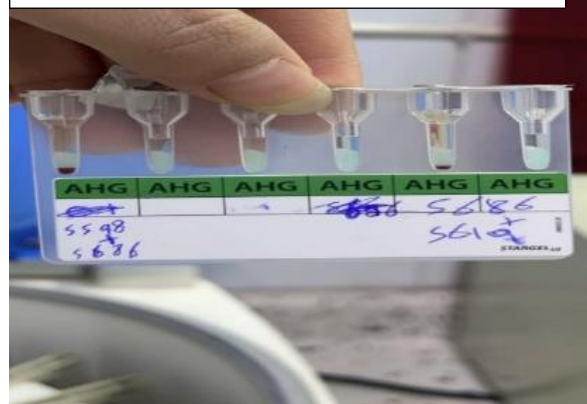
Requirements

- 1- EDTA tube
- 2- Gel tube
- 3- Clean dry tubes
- 4- Normal saline
- 5- Microscope
- 6- Dropper
- 7- Slide
- 8- Cover slip
- 9- Incubator
- 10- Anti- human globulin (anti -antibodies)
- 11- Blood of both donor and recipient
- 12- Syringes
- 13- Cotton
- 14- Alcohol
- 15- Tourniquet

ABO blood grouping by gel card



Cross matching by gel card



Gel card centrifuge and incubator

