



**BLOOD GROUP CROSS MATCHING PROCEDURE
IN
TRANSFUSION PROCESS**

1. Introduction

Cross matching is designed to prevent some transfusion reactions which may occur after transfusion. There are two types of cross matches:

- **Major Cross Match:** It involves testing the donor's red cells with recipient's serum to determine the presence of any antibody which may cause hemolysis or agglutination of donor red cells. This is more important than minor cross match.
- **Minor Cross Match:** It involves testing of donor's plasma with recipient's red cells to determine the presence of any antibody which may cause hemolysis or agglutination of recipient's red cells.

2. Major Cross Match

- 1) Prepare donor and recipient's blood sample: Donor's red cells and recipient's serum/plasma.
- 2) Prepare 3-5% saline cell suspension of red cells.
- 3) Label a test tube.
- 4) Add two drops of recipient's serum and one drop of donor cell suspension.
- 5) Mix and incubate the tubes at 37 degrees Celsius for about 60 minutes.
- 6) Decant the serum completely and wash the cells three times in saline.
- 7) Add two drops of Anti-human Globulin (AHG) and mix. Allow to stand at room temperature for 5 minutes.
- 8) Centrifuge at 1500 rpm for 1 minute.
- 9) Observe macroscopically and microscopically for agglutination.
- 10) 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.

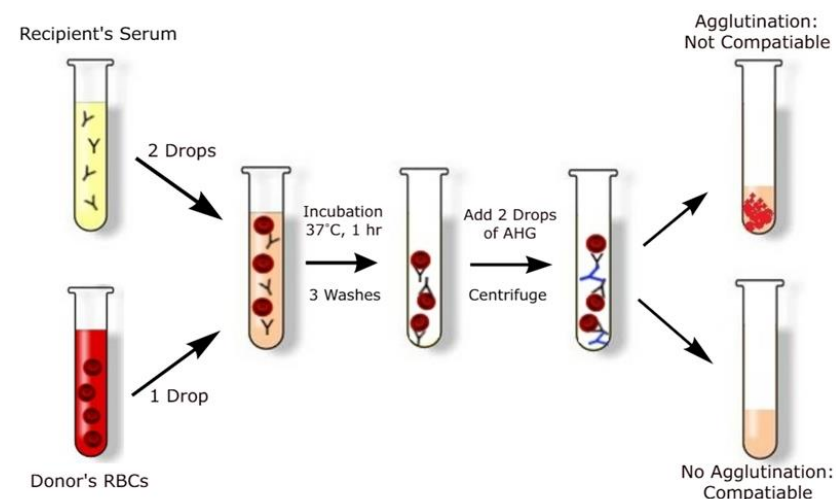


Figure 1 : Steps showing major cross match



3. Minor Cross Match

1. Prepare donor and recipient's blood sample: Recipient's red cells and donor's serum/plasma.
2. Label a test tube.
3. Add two drops of donor's serum and one drop of recipient's cell suspension.
4. Mix and incubate the tubes at 37 degrees Celsius for about 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.

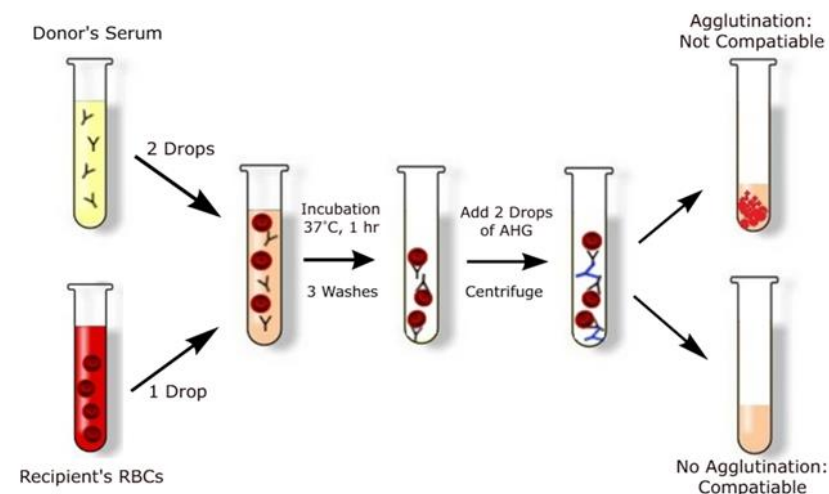


Figure 1 : Steps showing minor cross match

10. Result interpretation

Compatible donor and recipient blood should show no agglutination in both major and minor cross match. Blood which shows incompatibility in major cross match should never be transfused, because the large plasma volume of the recipient blood containing antibodies can destroy the donor's red cells easily. 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.

References :

- [http://laboratorytests.org/cross-matching/#:~:text=Major%20Cross%20Match,-Prepare%20donor%20and&text=Add%20two%20drops%20of%20recipient's,Globulin%20\(AHG\)%20and%20mix.](http://laboratorytests.org/cross-matching/#:~:text=Major%20Cross%20Match,-Prepare%20donor%20and&text=Add%20two%20drops%20of%20recipient's,Globulin%20(AHG)%20and%20mix.)
- <https://www.hematology.org/education/patients/blood-basics/blood-safety-and-matching>
- University of Medical Technology University : Hematology General Practical Guidance on Blood Bank Handbook