



BLOOD TRANSFUSION

RH BLOOD GROUPING

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الاهلية

كلية التقنيات الصحية

Department of Medical

والطبية

Laboratories.....

قسم تقنيات المختبرات

Stage: forth

الطبية

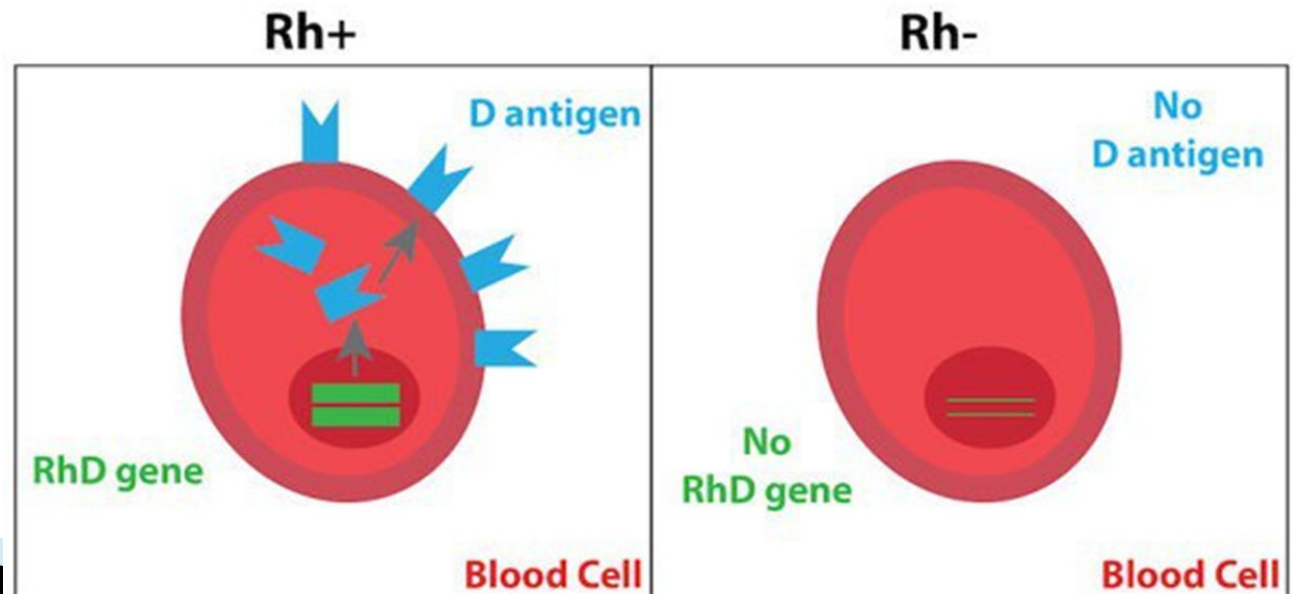
تدريسي المادة :د. هبة محمد

:Contents

- Definition.
- Test method.
- Weak D phenotype.
- Test for weak D.

Definition

- The term Rh refers to a specific red blood cell (RBC) antigen (D) and to a complex blood group system currently composed of over 50 different antigenic specificities, of which the five antigens D, C, c, E, e are among the most prominent.
- Rh is the second most important blood group system in terms of transfusion.



- Rh-positive indicates that an individual's red blood cells possess one particular Rh antigen, the D antigen, on their red blood cells.
- Rh-negative indicates that the red blood cells lack the D antigen.

Rh FACTOR

Rh POSITIVE				
Rh NEGATIVE				

 Rh ANTIGEN

 A ANTIGEN

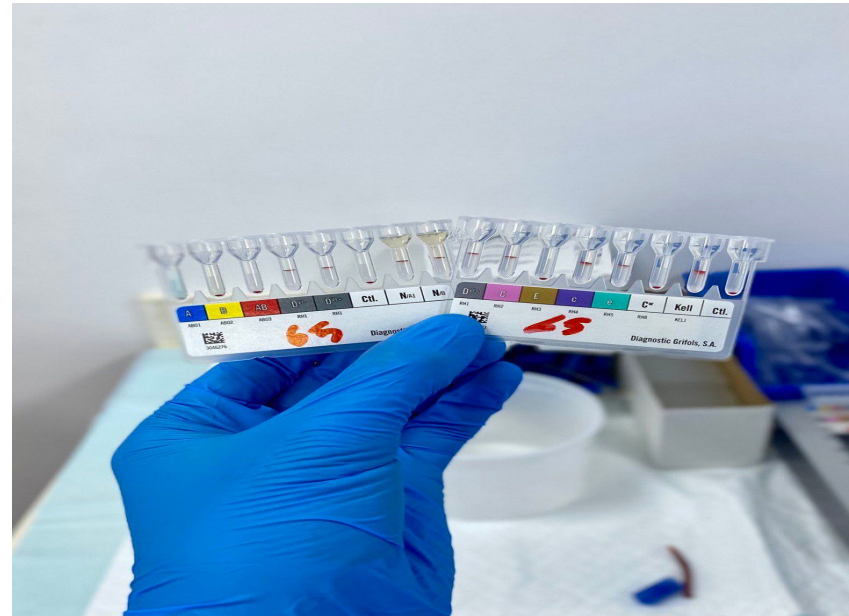
 B ANTIGEN

- The Rh system antigens are very immunogenic, Unlike ABO antibodies that are typically found in individuals who lack the corresponding antigen, Rh antibodies are produced only after exposure to foreign red blood cell.

- D antigen is the most potent.

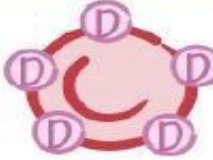
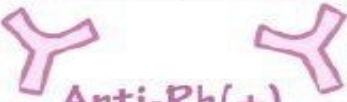
D → c → E → C → e

highly immunogenic rarely



- Rh antibody, once present they can produce significant hemolytic disease of the fetus and newborn (HDFN) as well as hemolytic transfusion reactions.
- Exposure of an Rh negative person to less than 1 ml of Rh positive RBC (during pregnancy or blood transfusion) can stimulate antibody production.

Rh Blood Groups

Blood Type	+	-
Red Blood Cell Antigens		 No antigens
Plasma antibodies <i>After Exposure</i>	N/A	 Anti-Rh(+) antibodies
Subsequent Mixture & Agglutination	N/A	

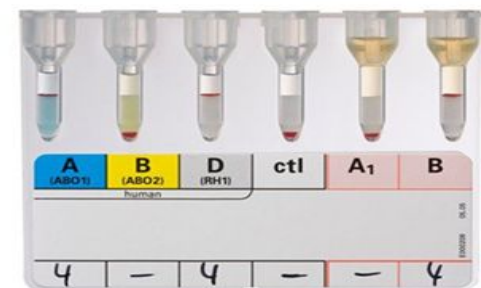
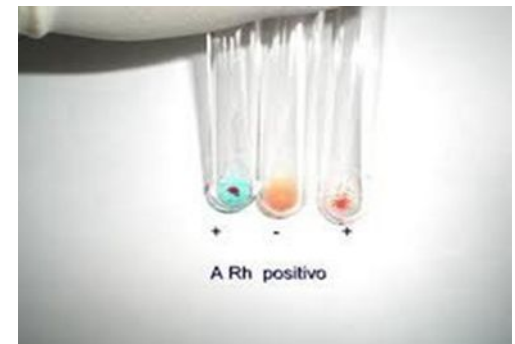
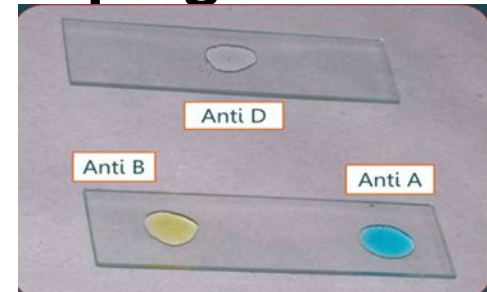
Tests for Rh grouping

- In most of the blood banks the routine typing for Rh is carried out for D antigen only. The tests for other Rh antigens are recommended in specific conditions.
- Reagent sera used Monoclonal Anti D IgM & IgG.



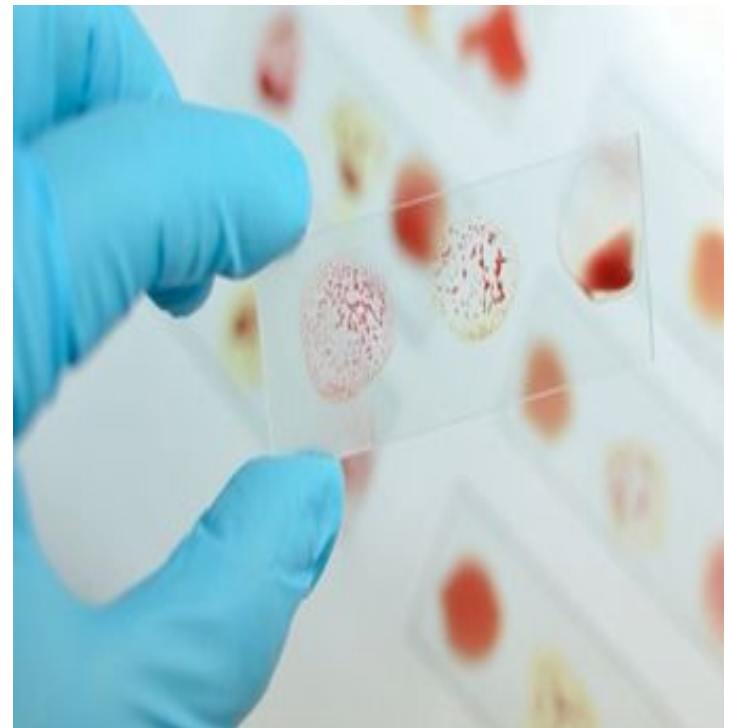
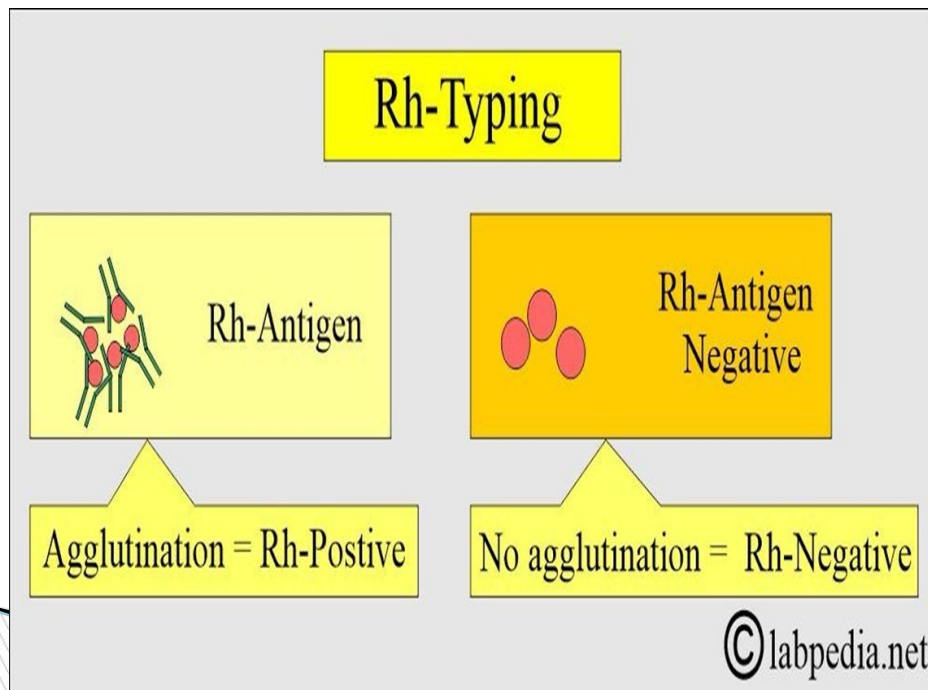
There are many techniques for Rh grouping:

- Slide test.
- Tube test.
- Gel technique by its ID card system.
- Solid-phase techniques.
- Liquid-phase microplate method.

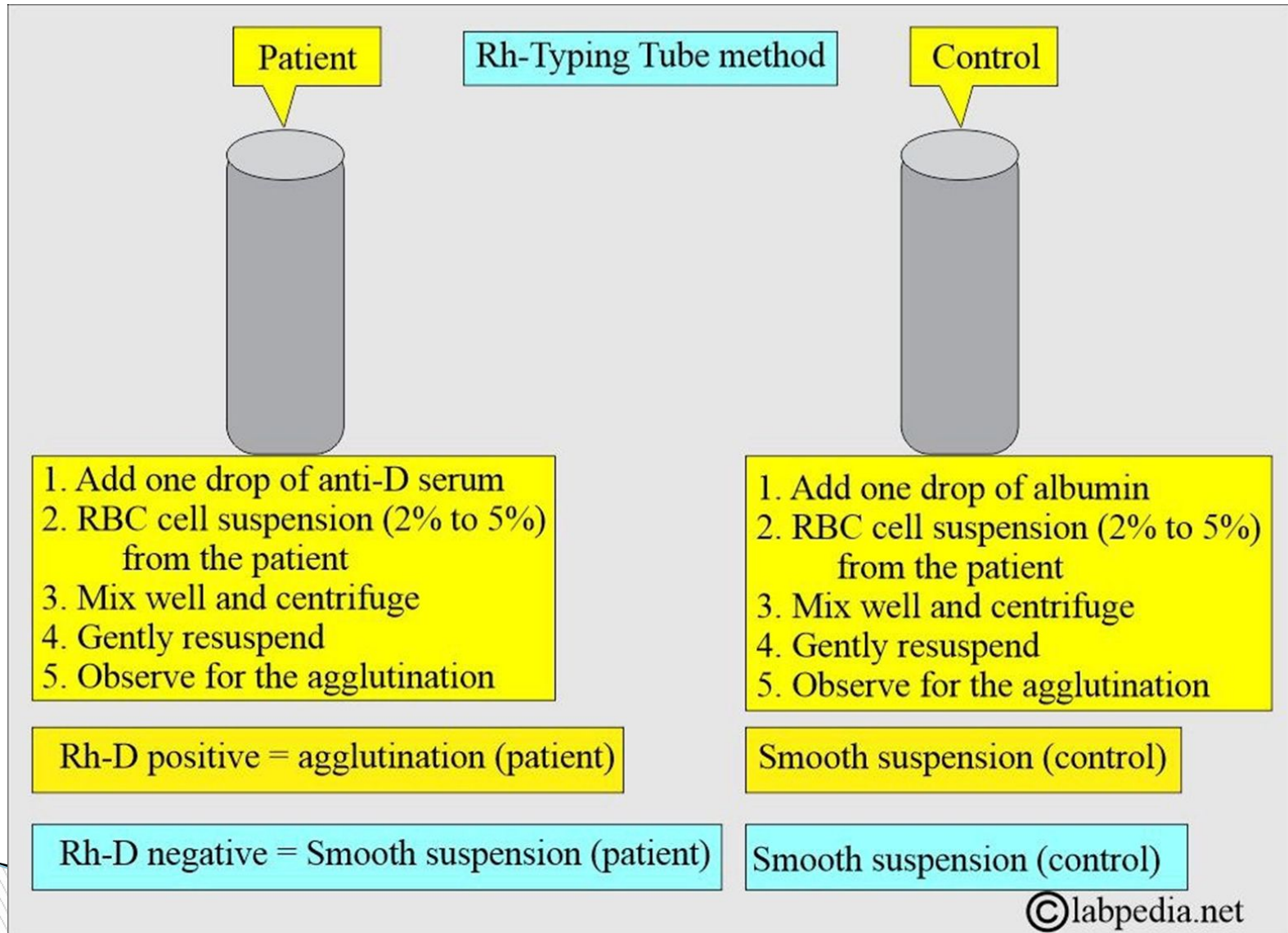


Slide test

- The technique is simple but not reliable. It is recommended for outdoor camps and not for routine testing in the blood banks. The weakly reactive cells may not give a positive test.

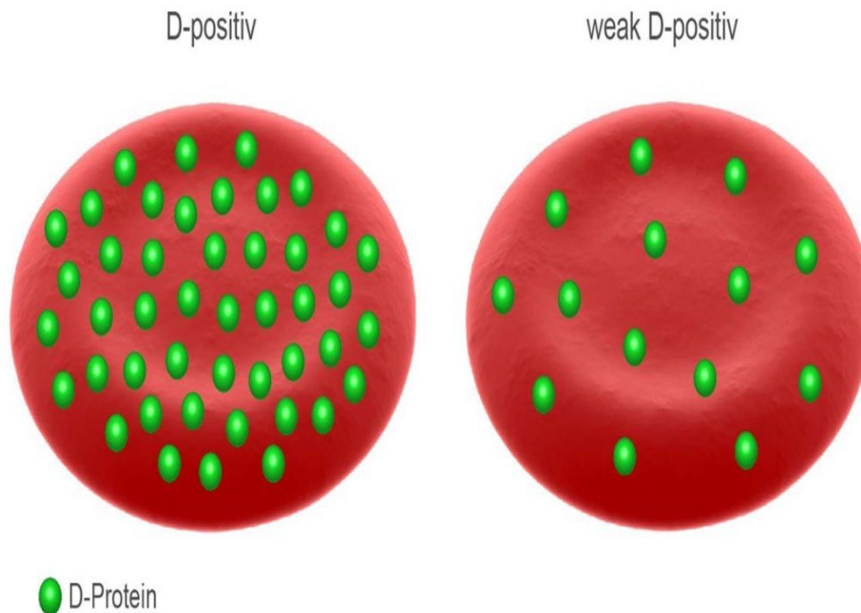


Tube test



The D weak phenotype

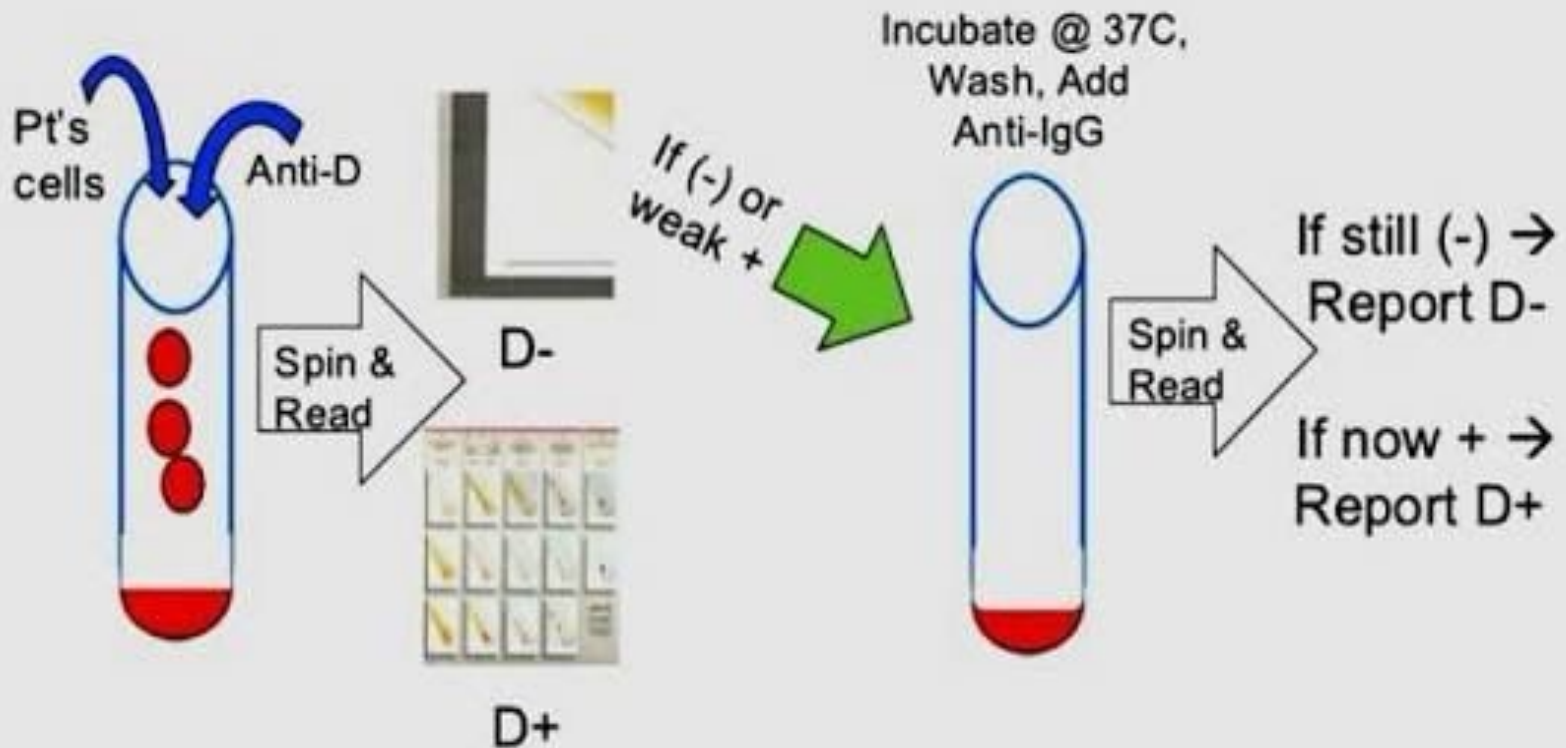
- It has been observed that certain D positive red cells are not agglutinated by all anti-D sera, **but require antihuman globulin (Coomb's) sera** in indirect Coomb's test (IAT) to show agglutination. This particular D phenotype is called D weak. So, D weak is not a different antigen but a differing expression of D antigen.



Test for weak D

- Anti-D reagents

Direct Agglutination + IAT or Weak D Testing



□ Q:

mention one test can use this reagent:



Q: 15 year old female with blood group AB(Rh) positive, so she has:

1. A antigen.
2. B antigen.
3. O antibody.
4. D antigen.

References

1. Modern Blood Banking & Transfusion Practices.
2. Practical Transfusion Medicine.