



جامعة المستقبل

كلية التقنيات الصحية والطبية-قسم التخدير

Physiology Practical

Lecture: (3)

BLOOD GROUB

اعداد

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General Objective of the Lecture:

To equip students with knowledge about blood group classification (ABO and Rh) and the practical methods for determining them based on the immune reaction between antigens and antibodies.

Behavioral Objectives:

- 1. Differentiate between the various blood types (A, B, AB, O) based on the presence of antigens.**
- 2. Explain the agglutination process.**
- 3. Perform a blood type test using the appropriate serum.**
- 4. Analyze the results of the blood type test to accurately determine the blood type.**

Topics of the Lecture

- 1. Definition of blood groups and types (A, B, AB, O).**
- 2. The Rh system (positive and negative) and its role in blood type determination.**
- 3. The immune reaction (agglutination) between antigens and antibodies.**
- 4. Practical steps for determining blood types in the laboratory using the necessary materials.**

ماذا تعنى لك هذه الصورة


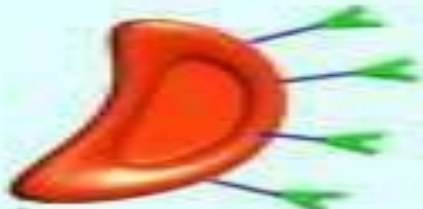











BLOOD GROUP

- **Blood group means classification of blood based on the presence or absence of inherited antigenic substances on the surface of red blood cells (RBCs).**
- **These antigens may be proteins, carbohydrates, glycoproteins, or glycolipids, depending on the blood group system.**
- **Some of these antigens are also present on the surface of other types of cells of various tissues.**

TYPES OF BLOOD GROUP

- **Type A:** blood has RBCs with surface antigen A only AND your plasma contains anti-B antibodies. Reported is A
- **Type B:** blood has RBCs with surface antigen B only AND your plasma contains anti-A antibodies. Reported is B
- **Type AB:** blood has RBCs with both A and B surface antigens AND your plasma has neither anti-A nor anti-B antibodies. reported is AB
- **Type O :** blood has RBCs lacking both A and B surface antigens AND your plasma contains both anti-A and anti-B antibodies. reported is O

BLOOD GROUP	ANTIGEN + ANTIBODY PRESENT	
	 ANTIGEN-A	 MAKES ANTI-B
	 ANTIGEN-B	 MAKES ANTI-A
	 ANTIGENS A & B	MAKES NEITHER ANTI-A NOR ANTI-B
	 NEITHER A OR B ANTIGEN	 MAKES BOTH ANTI-A AND ANTI-B

Blood group	Antigen(s) present on the red blood cells	Antibodies present in the serum
A	A antigen	Anti-B
B	B antigen	Anti-A
AB	A antigen and B antigen	None
O	None	Anti-A and Anti-B

- Determination of blood group depends on immunological reactions between antigen and antibody.
- Antigens are also called agglutinogens because of their capacity to cause agglutination of RBCs.

RH SYSTEM

- The Rhesus system (Rh) is the second most important blood group system in humans. The most significant and immunogenic Rhesus antigen is the RhD antigen
- Depends on the presence and absence of another antigen on the surface of RBC called Rhesus(RH).
- The term Rh positive (Rh+) indicates the presence of the Rh surface antigen.
- The absence of this antigen is indicated as Rh negative(Rh–).

مهمة: أكتب تقريراً مفصلاً عن دور العامل الرئيسي Rh في جسم الإنسان.

ABO SYSTEM

- **The ABO and Rh blood grouping system is based on agglutination reaction. When red blood cells carrying one or both the antigens are exposed to the corresponding antibodies they interact with each other to form visible agglutination or clumping.**

Material Required

Anti A

Anti B

Anti RhD

Cavity slide

Disposable Mixing Stick

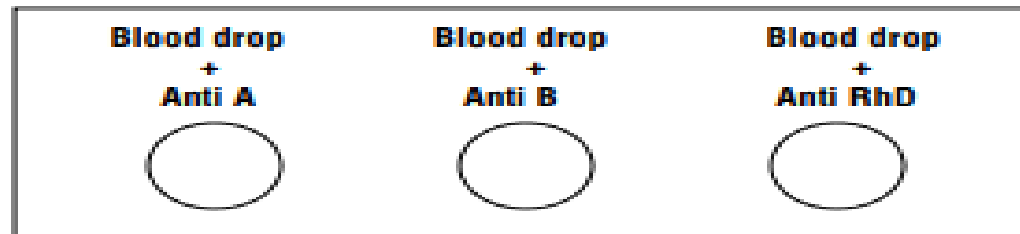
Blood Lancet

70% Alcohol/ Spirit

Cotton










PROCEDURE

- **Clean the fingertip to be pierced with spirit or 70% alcohol (usually ring or middle finger).**
- **With the help of the sterile lancet, pierce the fingertip and place one drop of blood in each of the cavities.**
- **Add one drop of antiserum into each cavity as shown below:**





LABOESCUELA

No.	Anti-A	Anti-B	Anti-D
1			
2			
3			

Note:- the Agglutination of blood occur when presence of same antigene and antibody

INTERPRITATION

- If agglutination is observed when blood is mixed with Anti A reagent, then the individual is said to have blood group “**A**”.
- If agglutination is observed when blood is mixed with Anti B reagent, then the individual is said to have blood group “**B**”.
- If agglutination is observed when blood is mixed with Anti A and Anti B reagent, then the individual is said to have blood group “**AB**”.
- If no agglutination is observed when blood is mixed with Anti A and Anti B reagent, then the individual is said to have blood group “**O**”.

نشاط جماعي

تشكيل مجاميع صغيرة واجراء اختبار فحص فصائل الدم وكتابة النتيجة.

*Thank
You!*