

جامعة الانبار

كلية : الصيدلة

قسم : فرع الادوية والسموم

اسم المادة باللغة العربية: فسلجة عملي

اسم المدة باللغة الإنكليزية: **physiology lab.**

المرحلة: الثانية

التدريسي: مروة شكيب ذنون

عنوان المحاضرة باللغة العربية: مجاميع الدم

عنوان المحاضرة باللغة الإنكليزية: **ABO-D SYSTEM ; BLOODTYPIN**

ABO-D SYSTEM ; BLOODTYPINGCROSS MATCHING

BLOOD GROUPS IMPORTANCE

- In blood transfusion .
- In preventing haemolytic disease(Rh incompatibility).
- In paternity disputes.
- In medico-legal cases .
- In knowing susceptibility to disease
- Group O -duodenal cancer.
- Group A -CA Of stomach , Pancreas& salivary glands .

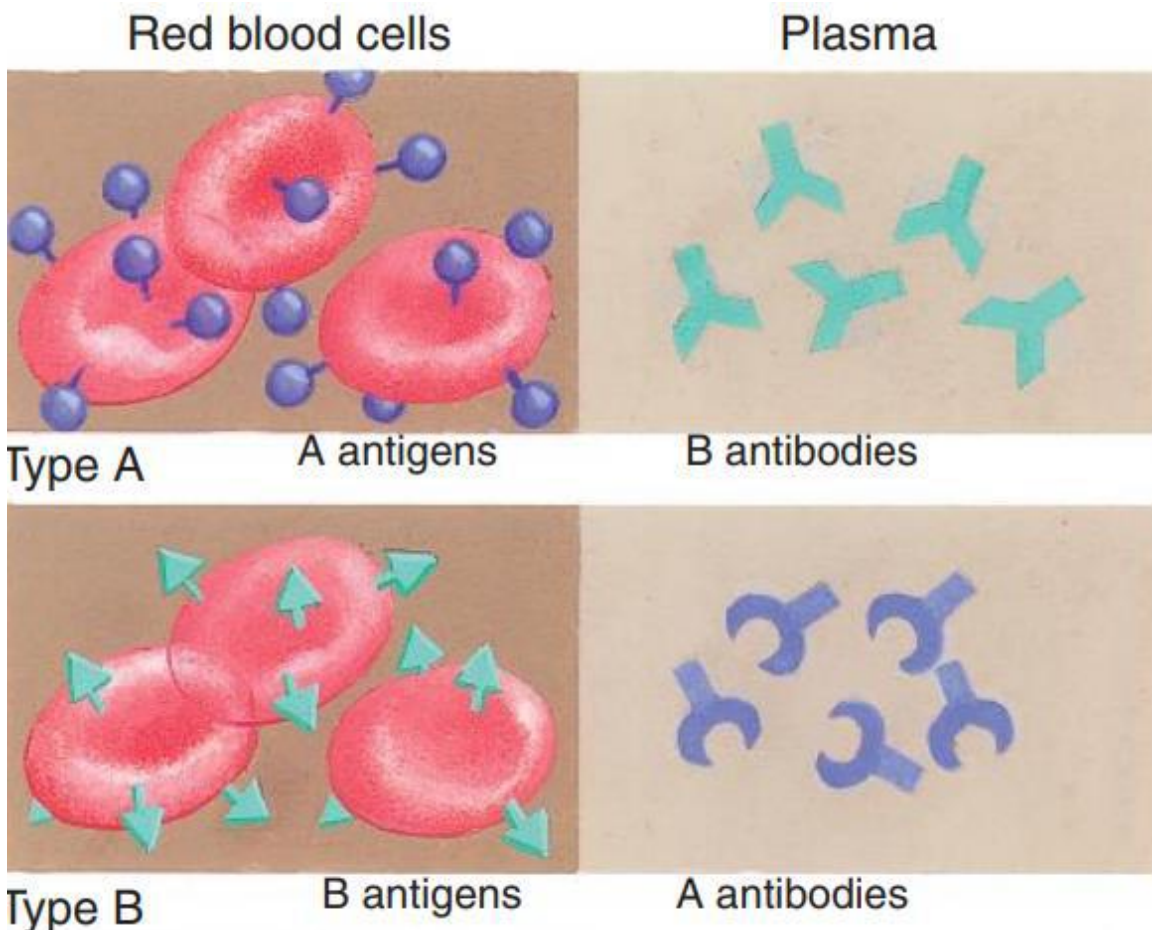
BLOOD GROUPING ABO SYSTEM

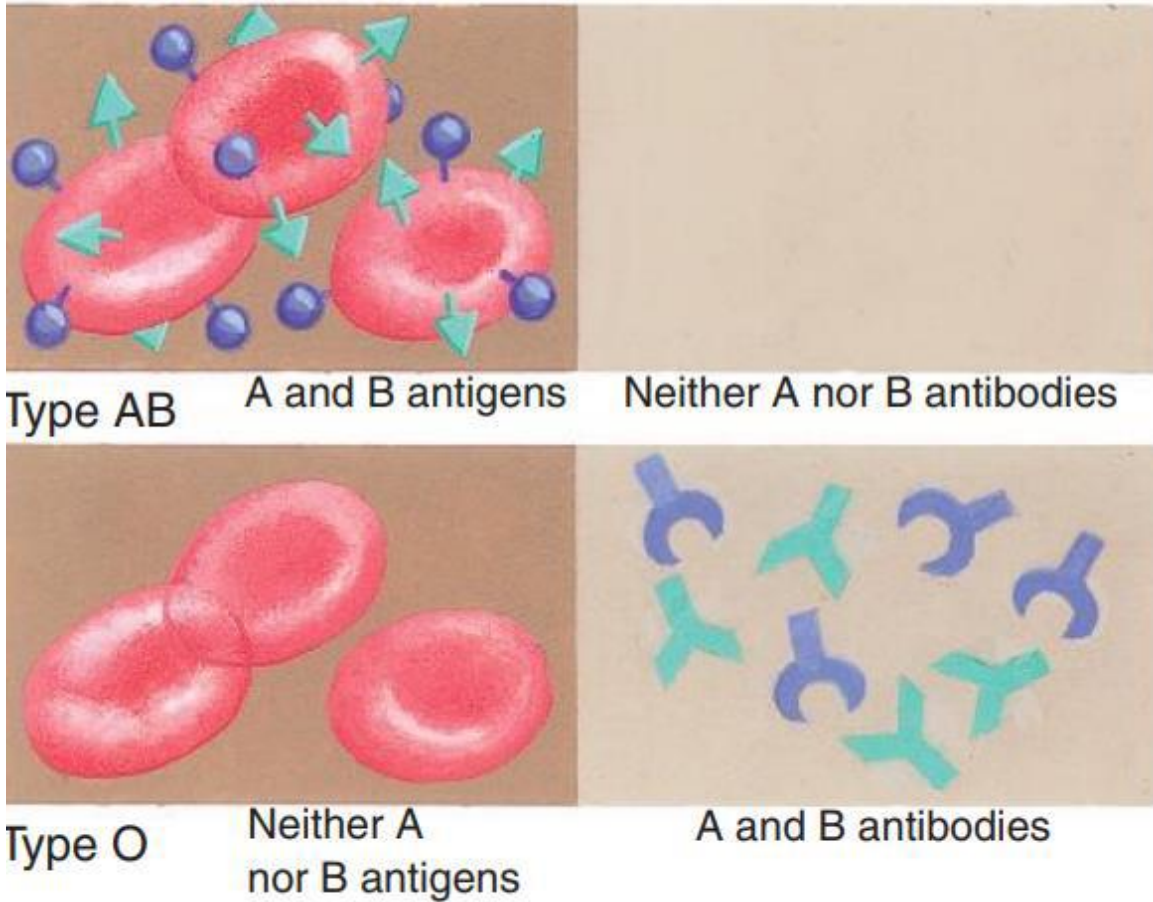
1. The RBCs cell membrane contain a series of antigens ;A, B, known as agglutinogens ,

2. the plasma contains antibodies known as agglutinins (Anti-A , Anti-B) Of IgM type .

*** IgM type *(Does not cross the placental barrier ****) .

□ ABO grouping test : Is designed o find out a person's blood group .





Type AB

A and B antigens

Neither A nor B antibodies

Type O

Neither A
nor B antigens

A and B antibodies

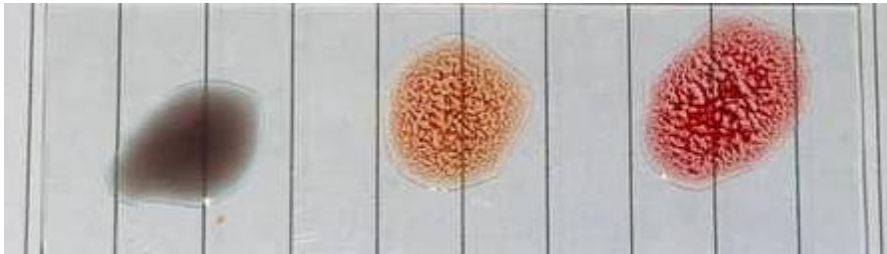
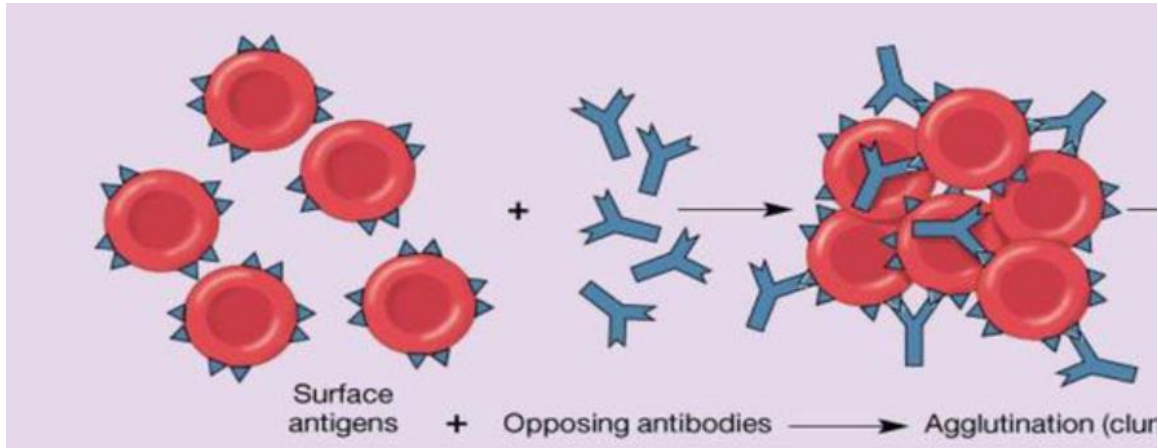
BLOOD GROUPING RH (D) ANTIGEN

Important in the females of child-bearing age.

- was first discovered in blood of rhesus monkey.
- Only detected On RBC membrane
- No Ab in plasma usually but in sensitized mother develop Rh-antibody (IgG type antibody)
**** (IgG type antibody) can cross the placental barrier ****)
- C, D, E Ag (D is the most immunogenic);
- RBC with D protein = Rh+
- RBC without D protein = Rh-

•(85% of Caucasoids , 95% black American ,99% of Chinese &100% of black afrecansare Rh+

AGGLUTINATIONINBLOOD TYPING



Agglutination is the reaction between RBCs **antigens**(agglutinogens) plus plasma **antibodies**known as (agglutinins).

□ **This reaction in vitro (slide) may be used to Diagnosis of Blood type; ABO-D type ;RBCs are made to react with sera containing known agglutinins (Ant-A, Ant-B & Anti-D).**

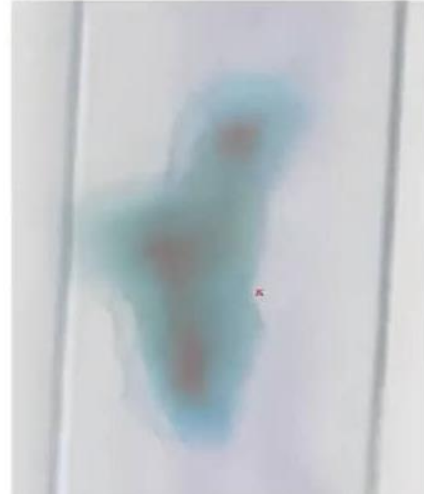
REAL AGGLUTINATION VS FORMATION

Agglutination
present



ROULEAUX

Rouleaux
formation



Rouleaux formation ;RBC are aggregate over each others like a column .

- Occur in bad technique or an increase in fibrinogen as acute phase reactant proteins (**Fibrinogen, CRP, Ferritin**).
- An increase in fibrinogen will neutralise the everting negative charge on RBCcell membrane lead to thisaggregation ;after 1houre can be labelled as (Elevated ESR ; Inflammatory prognostic marker)**

BLOOD TRANSFUSION INDICATION

1. Acute hemorrhage.
2. Sever anemia (if Hb decreased below 7 g/dL).
3. Erythroblastosis fetalis: in this case exchange transfusion is done.
4. To supply a necessary elements e.g. platelets, packed RBCs, and some clotting factors.

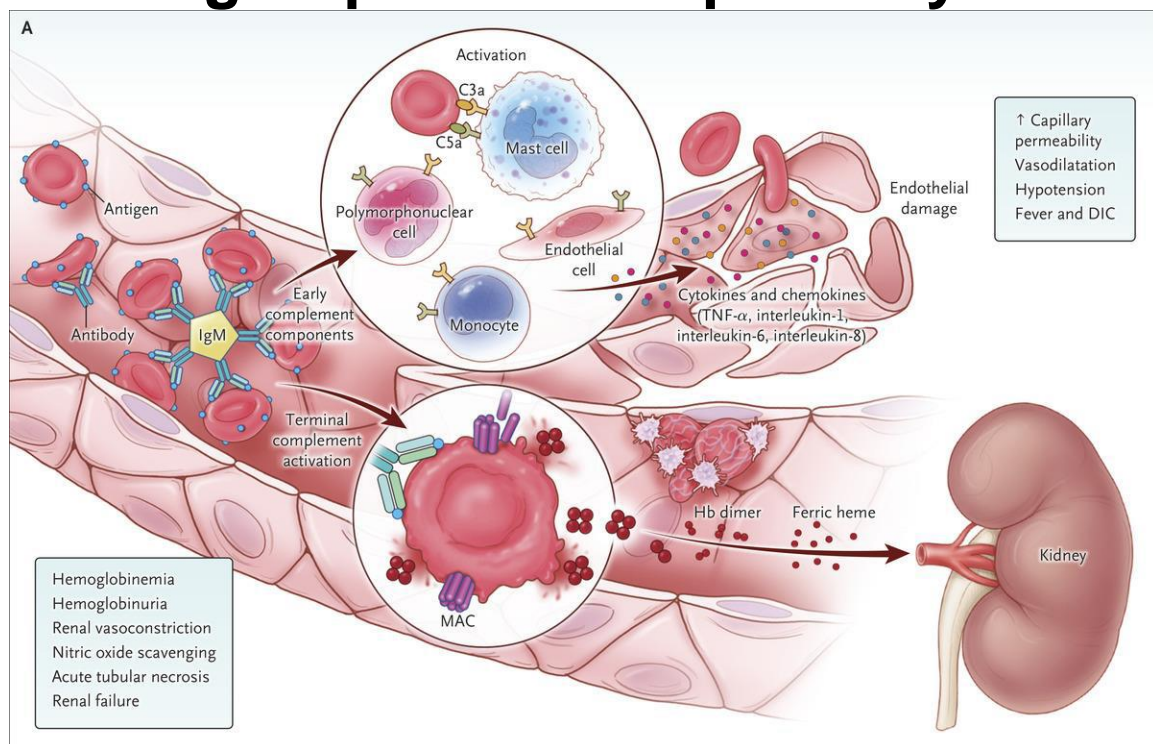
BLOOD GROUPS

Blood Group	Antigens	Antibodies	Can give blood to	Can receive blood from
AB	A and B	None	AB	AB, A, B, O
A	A	anti-B	A and AB	A and O
B	B	anti-A	B and AB	B and O
O	None	anti-A and anti-B	AB, A, B, O	O

TRANSFUSION REACTION BLOOD GROUP OR RH INCOMPATIBILITIES--AGGLUTINATION

1. If blood group are incompatible---Agglutination ; This Agglutination will be recognised by immune system and precedes toward haemolysis by liver and spleen to Hb essentials ; like bilirubin which may be harmful in high levels, C3, C4 activation, WBC ; IL1 ; fever, Histamine ; urticaria or anaphylaxis, finally ; Anemia, organomegaly & jaundice .

Pathophysiological Features of blood group are incompatibility



TRANSFUSION REACTION

BLOOD GROUP OR RH INCOMPATIBILITIES—AGGLUTINATION

2. Rh incompatibilities--Agglutination ;

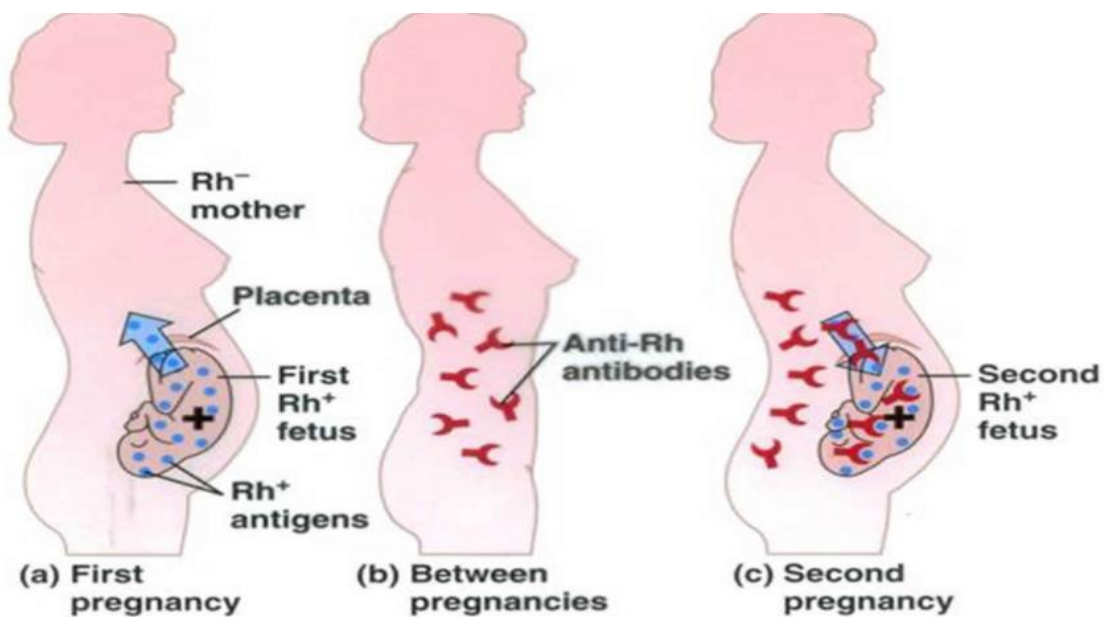
as in In Feto-maternal D incompatibility;

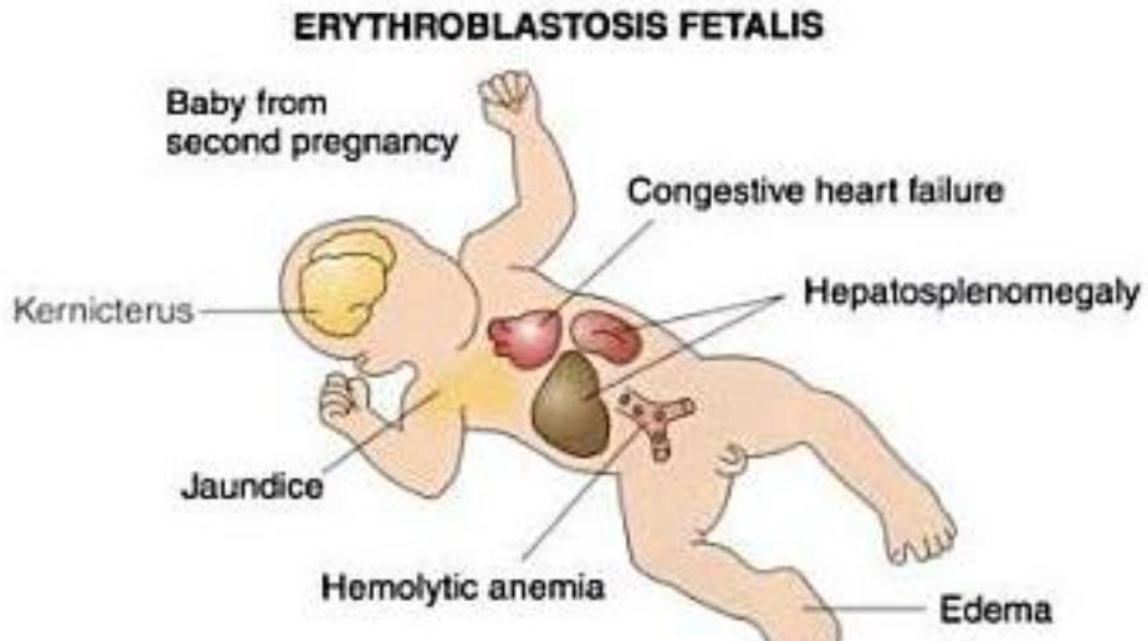
•3rd child anemia

•jaundice &-Kernicterus ,

•Organomegaly

IgG cross the placental barrier





BLOOD GROUPING PROCEDURE

The slide is divided into halves(2 slides) or 4 slides or even one slide (Modified).

2.A drop of Saline is added on other set of test before the blood drop ? Why

3.A drop of RBCs is added to each side and mixed well with the reagent.(**by IV-EDTA tube –Capillary transfer**)

4.A drop of anti-A is added, this will attach to and cause **clumping** of RBCs possessing the A antigen.

5.Another drop of anti-B is added which will cause **clumping** of RBCs with the B antigen.

6.Another drop of anti-D is added which will cause **clumping** of RBCs with the D antigen.

7. The slide is **tilted back and forth** for one minute and observed for **agglutination (clumping)** of the RBCs.

APPARATUS FOR BLOOD GROUPING

- Pricking apparatus & Spirit
- 4 Clean glass slides
- Normal saline
- Small test tube
- Dropper
- Antisera Anti-A, Anti-B and Anti-D



Lancet - Cotton



Spirit



Normal saline



Dropper



Test-tube



Antisera Anti-A, Anti-B and Anti-D



Untreated blood	Treated with anti-A serum	Treated with anti-B serum	Blood type
			A
			B
			AB
			O