HLS MODULE
PHYSIOLOGY (LAB 2)
BLOOD GROUPS &HEMOSTASIS TESTS

BY

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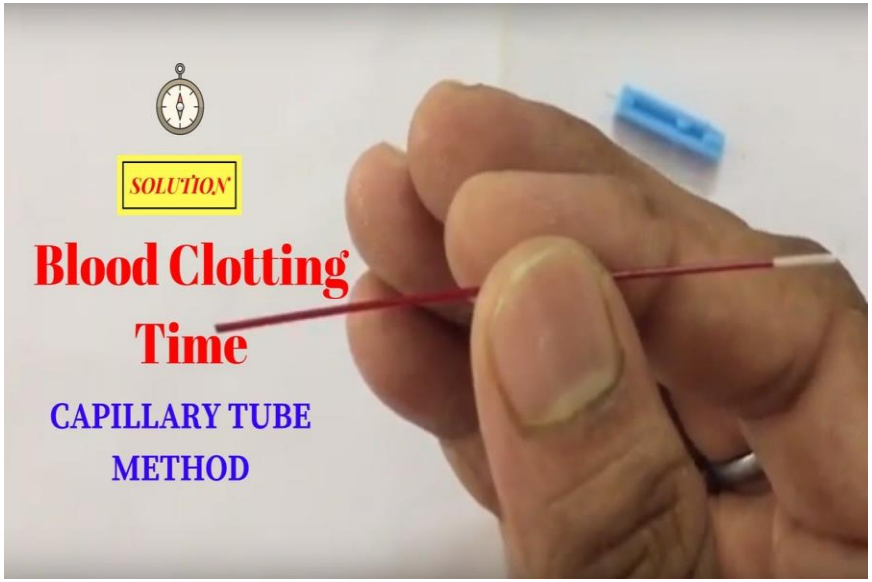
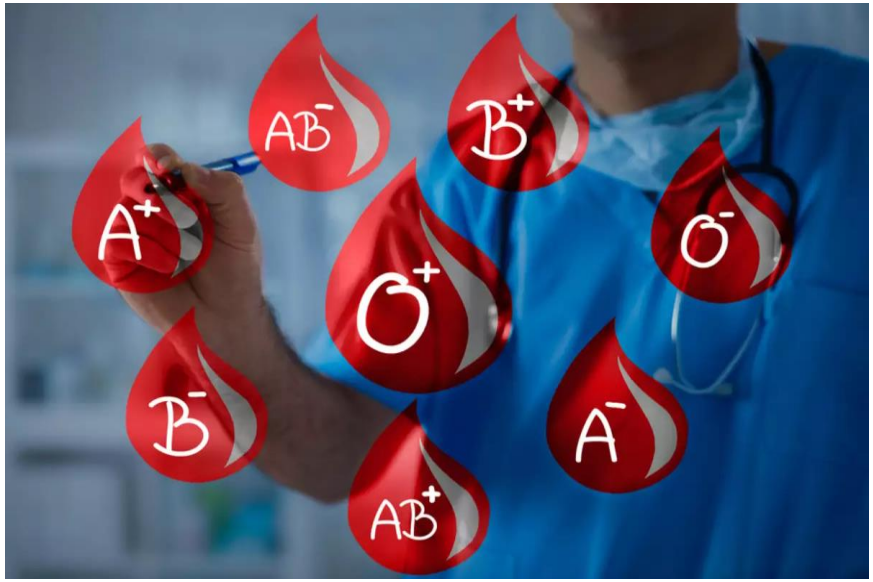




Experiment 1
BLOOD GROUPS

- There are 2 systems used to determine blood groups:

1. The ABO system.
2. The Rhesus (Rh) system.

Determination of blood groups (blood typing)

This is usually carried by slide technique:

- *Three drops of blood under test are placed separately on a glass slide.*
- *A drop of Anti-A serum, a drop of Anti-B serum and a drop of Anti-D serum are added to the three blood drops.*
- *Anti-A serum is then mixed with the first drop while Anti-B serum is mixed with the second drop and Anti-D serum is mixed with the third one.*
- *After 2-3 minutes, the drops are examined for antigen – antibody reaction (agglutination).*

Results :

- **If agglutination occurs with Anti-A serum only → the subject is group A.**
- **If agglutination occur with Anti-B serum only → the subject is group B.**
- **If agglutination occurs with both sera → the subject is group AB.**
- **If no agglutination occurs with both sera → the subject is group O.**
- **If agglutination occurs with Anti-D serum → the subject is Rh positive.**
- **If no agglutination occurs with Anti-D serum → the subject is Rh negative.**

Blood group determination

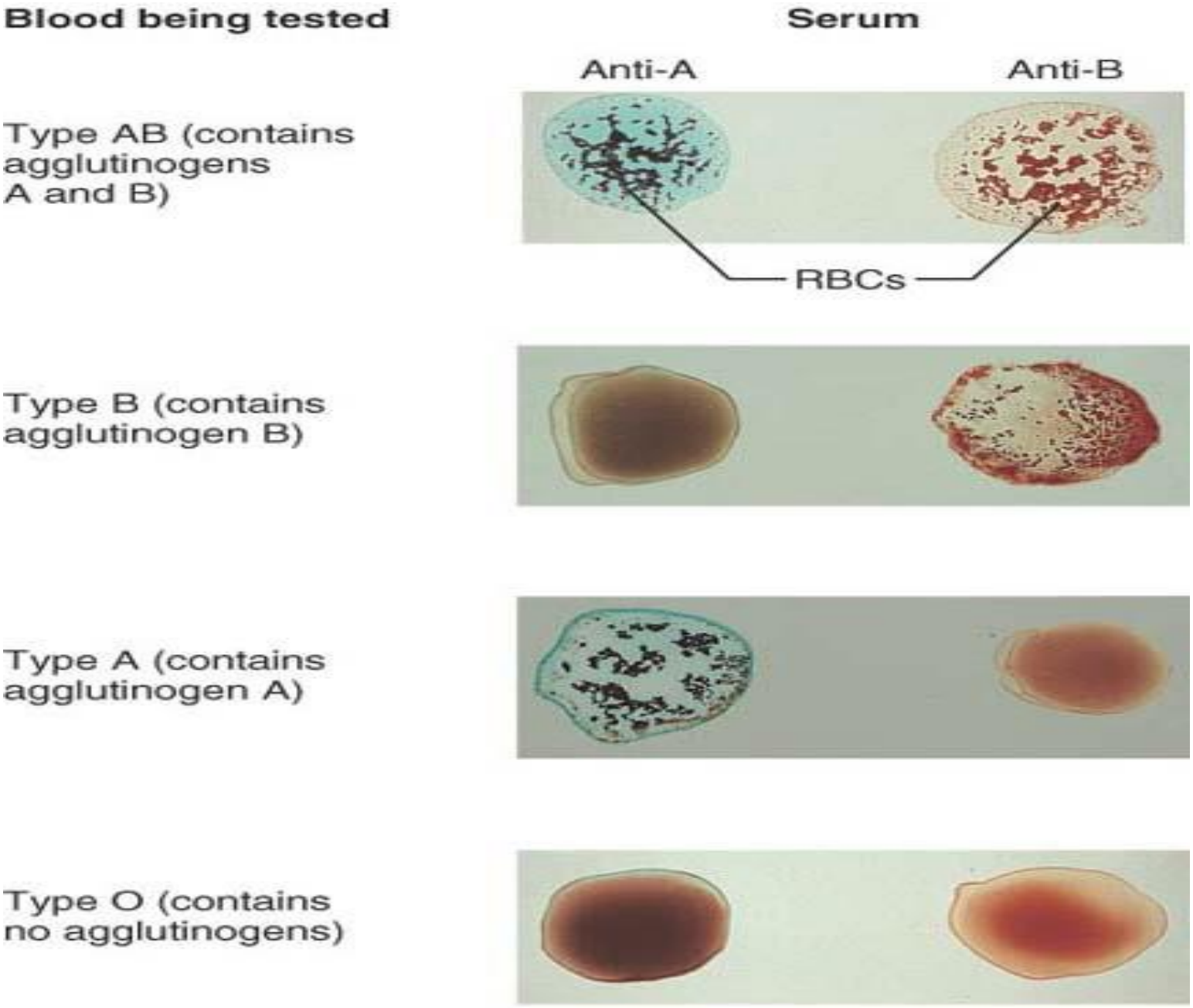
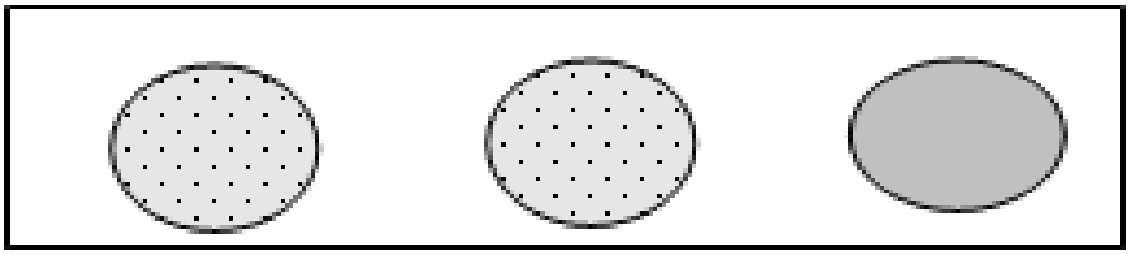


Figure 19-8 Blood Type Testing

Anti-A	Anti-B	Anti-D	Blood type
			A^+
			B^+
			AB^+
			O^-

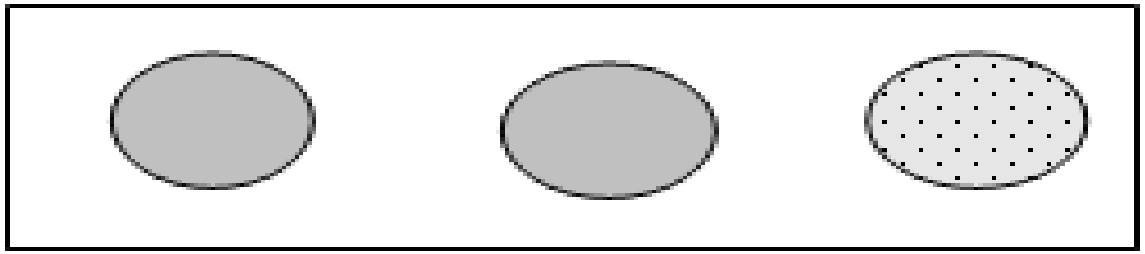
Summary of Slide Typing

Anti-A	Anti-B	Anti-D	Blood Group
Negative	Negative	Positive	O +ve
Positive	Negative	Negative	A -ve
Negative	Positive	Positive	B +ve
Positive	Positive	Negative	AB -ve



Anti-A serum Anti-B serum Anti-D serum

AB negative



Anti-A serum Anti-B serum Anti-D serum

O positive

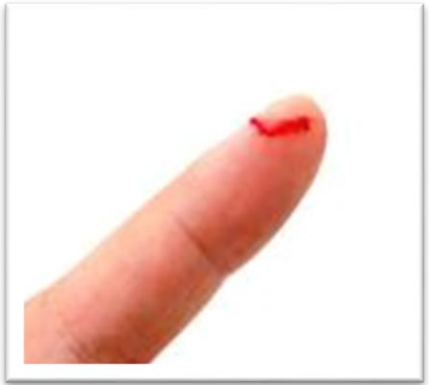
Experiment (2)
(Hemostasis tests)

1- Bleeding time

Definition: It is the time between the start of bleeding from an injured small blood vessel until its complete stoppage without formation of a blood clot.

Principle:

Determination of bleeding time tests the efficiency of hemostatic mechanisms other than blood clotting **(vascular spasm and platelet plug formation)**.



Materials:

1. Sterile, disposable lancet
2. Stopwatch
3. Filter paper
4. Alcohol pads
5. Gloves
6. Bandage

1

2

6

3

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4

Procedure (Duke's method):

- Clean the tip of finger or earlobe with alcohol pad.
- Prick the fingertip or earlobe with the lancet.
- The oozing blood is removed by a filter paper every about 30 seconds.
- The time elapsing between the prick and stoppage of bleeding is recorded by a stopwatch.

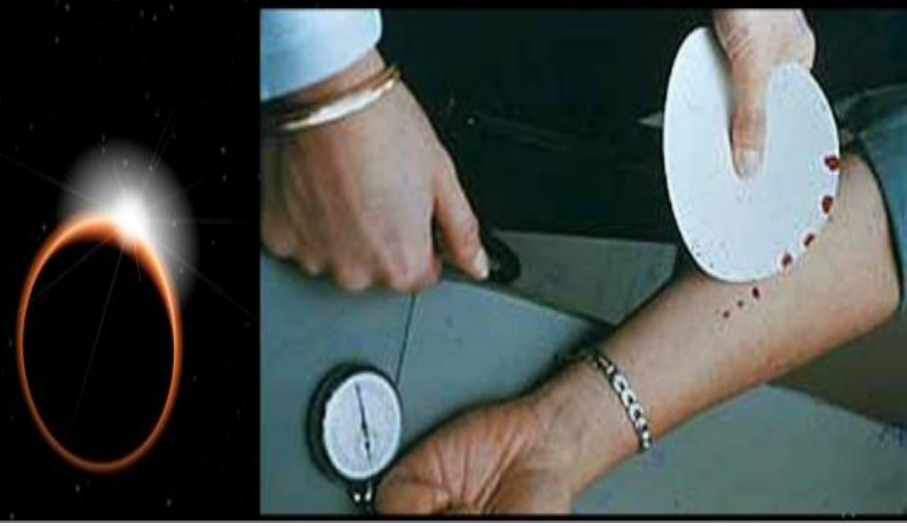
DUKE'S METHOD

- Easy to perform
- Requires minimal equipment
- Requirements-alcohol,sterile lancet,stopwatch,filter paper

Duke Method

With the Duke method, the patient is pricked with a special needle or lancet, preferably on the earlobe or fingertip.

The prick is about 3–4 mm deep. The patient then wipes the blood every 30 seconds with a filter paper.



Results:

Normal bleeding time ranges between 1-4 minutes.

Causes of prolonged bleeding time :

1. Purpura: Thrombocytopenia (decrease in the number of platelets below 50,000/ microliter or cubic mm; mm^3).
2. Vitamin C deficiency (Scurvy).
3. von Willebrand disease (due to deficiency of vWF).
4. Prolonged use of aspirin.

2- Clotting (Coagulation) time:

- It is the time needed for the blood to clot after withdrawal from the body (until fibrin thread is seen).
- It is measured from the time of blood withdrawal till a firm clot is formed.

Method:

Non-heparinized capillary tube method.

Principle:

It depends on the availability of the clotting factors required for blood clotting by **the intrinsic pathway of prothrombin activator**.

Materials:

1- Sterile, disposable lancet

2- Non heparinized capillary tubes

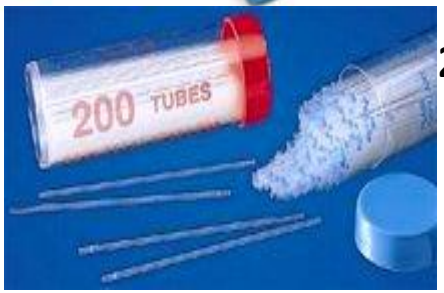
3- Stopwatch

4- Alcohol pads

5- Gloves

6- Bandage

1



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Procedure (Non-heparinized Capillary tube method):

1. Sterilize the fingertip with alcohol, allow to dry and then prick with lancet.
2. The oozing blood is withdrawn into a long glass non- heparinized capillary tube.
3. Short pieces of the tube are broken every 0.5 (half) minute until threads of fibrin are seen between the two ends (clot is formed).
4. The time between blood withdrawal and clot formation is recorded using a stopwatch.

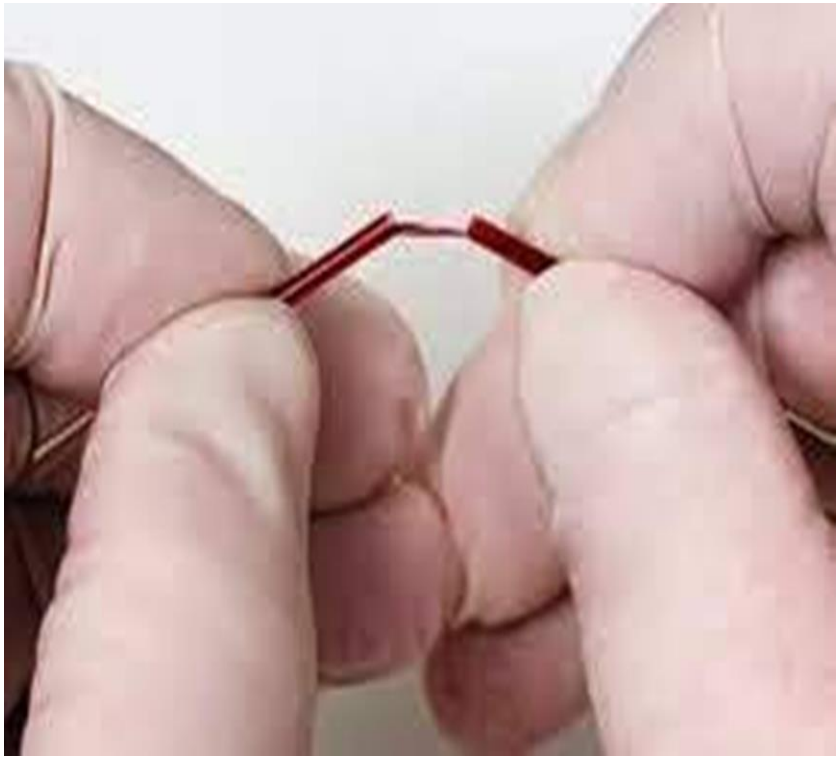
RESULTS

Results:

Normal clotting (coagulation) time ranges from 3-10 minutes.

Causes of Prolonged clotting time:

- A severe liver disease (in which most clotting factors are deficient).
- Vitamin K deficiency as in newborns, prolonged use of antibiotics, liver diseases and obstructive jaundice.
- Congenital abnormality as in : **Hemophilia** due to deficiency of factor VIII (A) or IX (B).
- Administration of anticoagulants.



This is a test of …clotting (coagulation) time …….

This is a test of …bleeding time…….


Thank You
Best Wishes