

كلية
المستقبل الجامعة

قسم هندسة تقنيات
الأجهزة الطبية



The Estimation of hemoglobin

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The Estimation of Hemoglobin (Hb)

Hemoglobin consist of the protein globin, united with pigment haem, haem is an iron containing, iron in haem is ferrus (Fe^{++})

As the red blood cell pass through the lungs the hemoglobin combine with oxygen from the air forming oxyhemoglobin and become bright in colour, this make the oxygenated blood bright red

Normal of Hb ▶

In male : 12–16 mg /dl ▶

In female : 11.5– 14 mg /dl ▶

In children : 14– 19 mg/dl ▶

Function of Hb ▶

It is essential for oxygen carriage. ▶

Play an essential part in transport of Co₂ and ▶
regulation of blood reaction.

Why measured of hemoglobin ?▶

Hemoglobin is measured to ▶
detect anemia and its severity
and to monitor anemic patient
under the treatment. •

It is also used to check the Hb ▶
level of potential donor's blood,
prior of donation.

Sahli method

Principle- ▶

- 1-Blood is mixed with an acid solution so that Hb is converted to brown colored acid hematin ▶
- 2-Diluted with water still brown colour matches that of brown glass standarder ▶
- 3-Hb value is read directly from scale ▶

Equipment

- 1-Sahli hemoglobinmeter ▶
- 2-Sahli pipette (20 microliter) ▶
- 3-Stirrer ▶
- 4-Dropping pipette ▶

Reagent ▶

- 1-HCL ▶
- 2-Distilled water ▶

Procedure

- 1 – all the apparatus must be clean and dry ▶
- 2 – put in graduated tube(HCL) 0.1 N to mark 20 ▶
- 3 – finger puncture ▶
- With capillary pipette suck the blood to mark 20 ▶
- 4 – mix with glassrod and leave for 10 min ▶
- This time sufficient for haemolysing all the red ▶
blood cells leaving hemoglobin to combine with
HCL to forming haematin
- 5 – then add distilled water drop by drop until ▶
match the colour with standard glass tube
- 6 – read the graduated tube ▶

Function of HCL

Hemolysis the RBCs and combin with Hb to form acid haematin ▶