Hemoglobin Determination

Sahli's Method of Hemoglobin Determination:

- A hemoglobinometer, also known as Hb-meter, is a laboratory instrument used in analyzing the hemoglobin content of the blood.
- Hemoglobin is an important component of red blood cells (RBCs).
  - Function: is responsible for carrying oxygen to different parts of the body and carbon dioxide for excretion out of the lungs.
  - This protein is also responsible in keeping red blood cells in their normal disc shape.

principle

The Hb present in a measured amount of blood is converted by dilute hydrochloric acid into acid hematin, which in dilution is golden brown in color. The intensity of color depends on the concentration of acid hematin which, in turn, depends on the concentration of Hb. The readings are obtained in g%.

Apparatus:

- Sahli's tube which is having red and yellow scales on two sides. Red scale is percentage scale and yellow scale is gram percentage or g/100ml scale.
- Heamometer which is having two standards.
- Sahli's pipette.
- Error percentage is 3%.

- **Chemical:**

- Hydrochloric acid (HCL) N/10
- Distilled water

Procedure

The haemoglobin tube was filled with N/10 hydrochloric acid (HCL) up to 2 gm marking. This graduated tube was placed in Sahli's Hemoglobinometer (Comparator with Brown glass).

1-Blood sample obtained from capillary or venous blood was drawn in Sahli's pipette up to 20µl mark .

2- add in haemoglobin tube containing N/10 HCL. The blood and acid are mixed with glass stirrer and allowed to stand for 5 minutes for acid haematin formation.

3-Drop by drop distilled water was added to dilute the acid haematin compound color till it matches with the standard color plates of the comparator. Results were read as gm/dl presented on the haemoglobin tube.

Normal Values

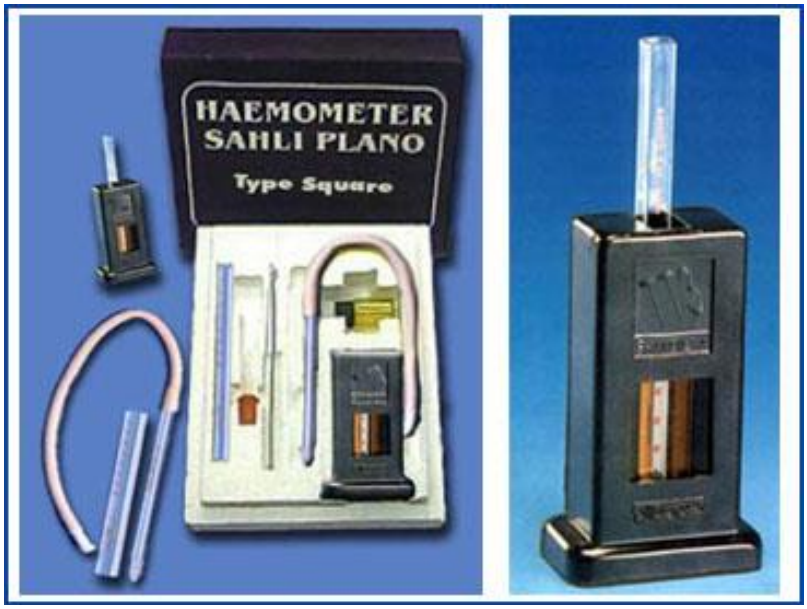
Males: 14.5 g/dl (13.5–18 g/dl).

Females: 12.5 g/dl (11.5–16 g/dl).

False results with this method may be due to:

i. Technical error. It may be due to: not taking exactly 20 cmm blood, or not giving enough time for formation of acid hematin, or using an old comparator that has faded glass rods.

ii. Personal error. Generally, it is not difficult to match color but since it is a visual method, color matching may vary from person to person.



Sahli's Method In Estimation Of Haemoglobin Concentration.

OBSERVATIONS AND RESULTS

Compare your color matching with that of your work-partner and record the observations in your workbook.
Take the average of 3 readings as shown below, and report your result as: Hb = …….g/dl.
1st reading, when the color is slightly darker than the standard:……..g/dl.
2nd reading, when, after adding a few drops of distilled water, the color exactly matches the standard: ……..…… g/dl.
3rd reading, when, after adding some more drops, the color becomes a little lighter than the standard:……..…….. g/dl.
For report. Express your result as: Hb= ...….g/dl.