



**Department of Anesthesia Techniques**

**Title of the lecture: -**

**ESTIMATION OF HEMOGLOBIN**

**by**

**Sahli's/acid hematin Method**

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# Sahli's/acid hematin Method

➔ **Principle:** Blood is mixed with N/10 HCl resulting in the conversion of Hb to acid hematin which is brown in color. The solution is diluted till it's color matches with the brown colored glass of the comparator box. The concentration of Hb is read directly.

➔ **Hemoglobin + (0.1 N) HCl** ➔ **Acid hematin (brown colour)**

❖ The brown color of compound is matched against a brown glass standard in a comparator.

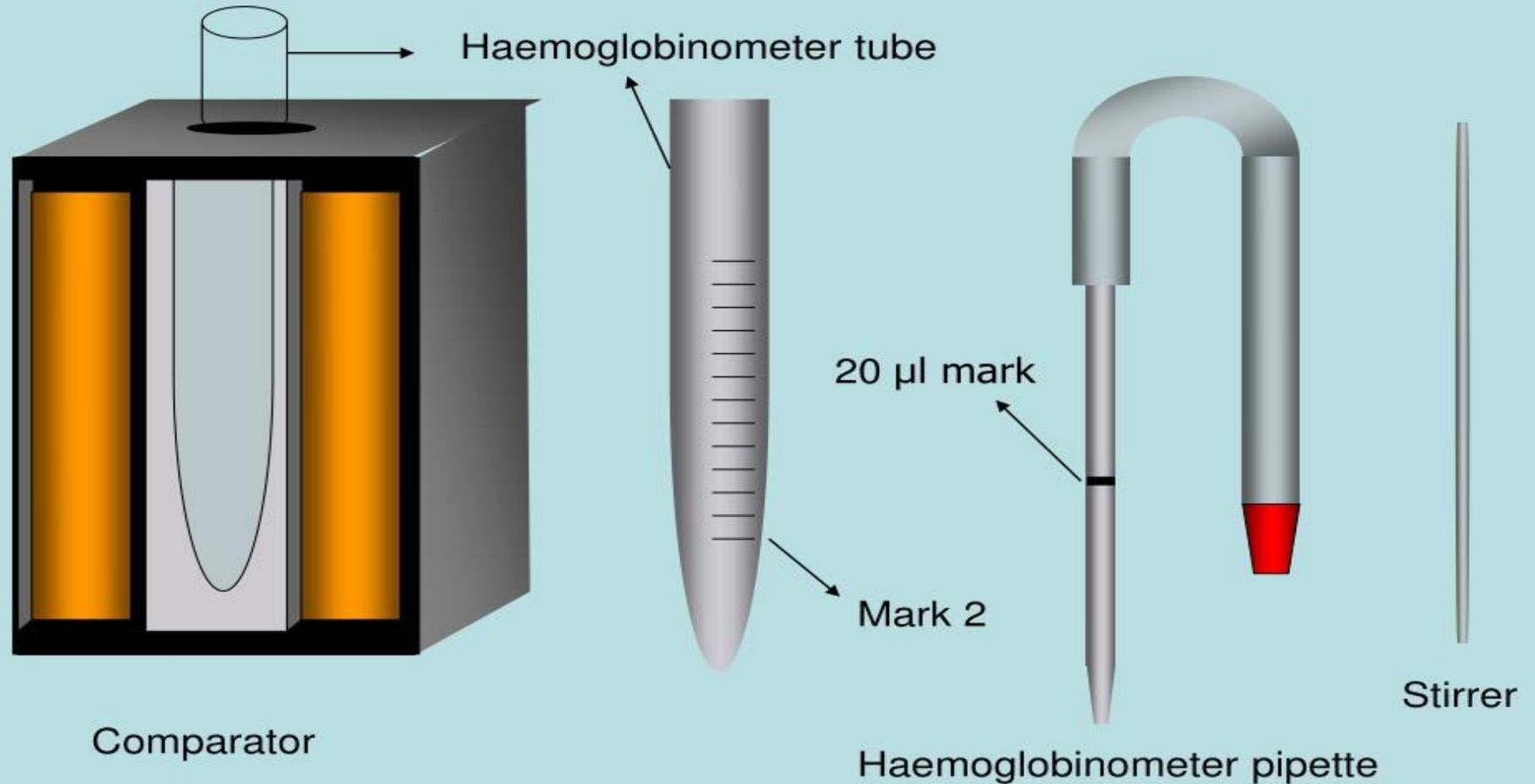


➡ **Equipment required**

➤ **Hemocytometer** which consists of:

1. comparator box which has brown colored glass on either side
2. Hb pipette which is marked up to  $20\text{mm}^3$  (0.02ml blood)
3. Tube with markings of Hb on one side
4. glass rod
5. dropper

# SAHLI'S HAEMOGLOBINOMETER





## ➤ Reagents required

- N/10 HCl
- Distilled water

## Sample:

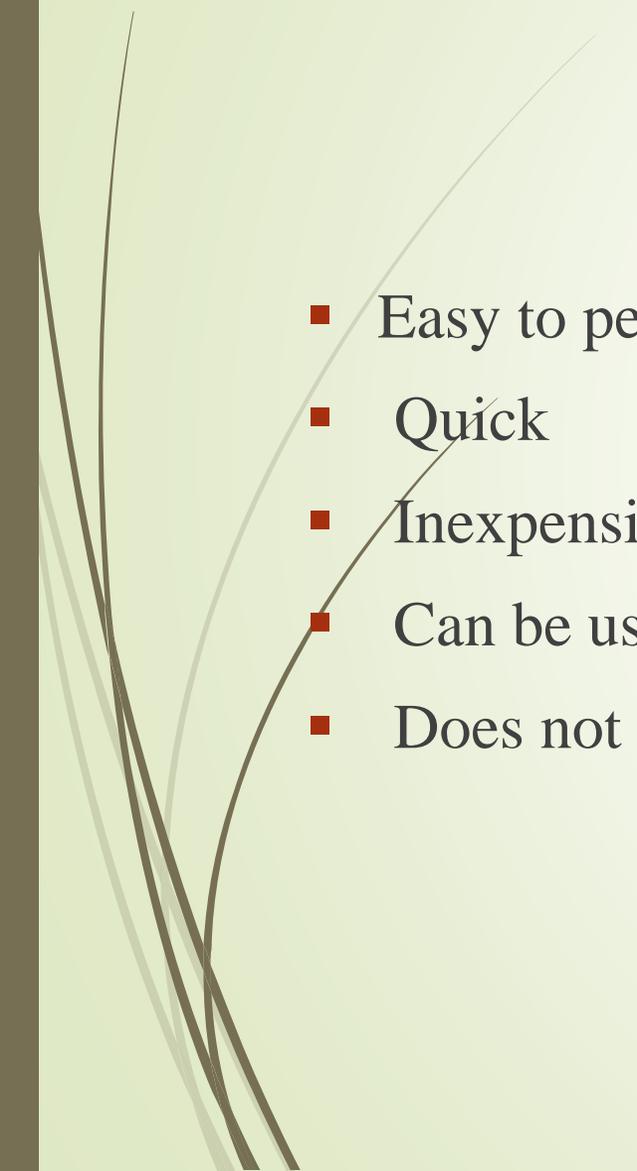
- Venous blood collected in EDTA as described earlier

## Procedure

1. Placed 0.1(N)HCl acid in the Sahli's tube up to the lowest mark 20% by using a Pasteur pipette
2. Pipette 0.02 ml of blood in a Hb-pipette and added with the 0.1(N)HCl acid present in the Sahli's tube. Mixed well and wait for 10 minutes.
3. Diluted the solution with distilled water by adding few drops at a time carefully and diluted the solution, until the colour matches with the glass comparator present in the haemometer.
4. The colour matching should be done only against natural day light. The level of the fluid is noted at its lower meniscus and the reading corresponding to this level on the scale is recorded in gm/dl.



# Advantages

- Easy to perform
  - Quick
  - Inexpensive
  - Can be used as a bedside procedure
  - Does not require technical expertise
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## Disadvantages

- Less accurate.
- All hemoglobins (oxyhemoglobin, sulphemoglobin) are not converted to acid hematin and hence the value of Hb obtained is less than the actual value.
- The color of acid hematin develops slowly.
- Color of acid hematin fades with time and dilution must be done exactly after 10 min when the color development is maximum
- Individual variation in matching of color is seen.

# Hemoglobin Interpretation

## A. Increased values:

### Physiological

- ❖ High altitude.
- ❖ Young age.

### Pathological

- ❖ Dehydration.



## **B. Decreased values :**

### **Physiological**

- ❖ Fluid therapy.

### **Pathological**

- ❖ Anemia.
- ❖ Hemorrhage.
- ❖ Blood parasites.
- ❖ Malignant tumors.



Best Wishes!