

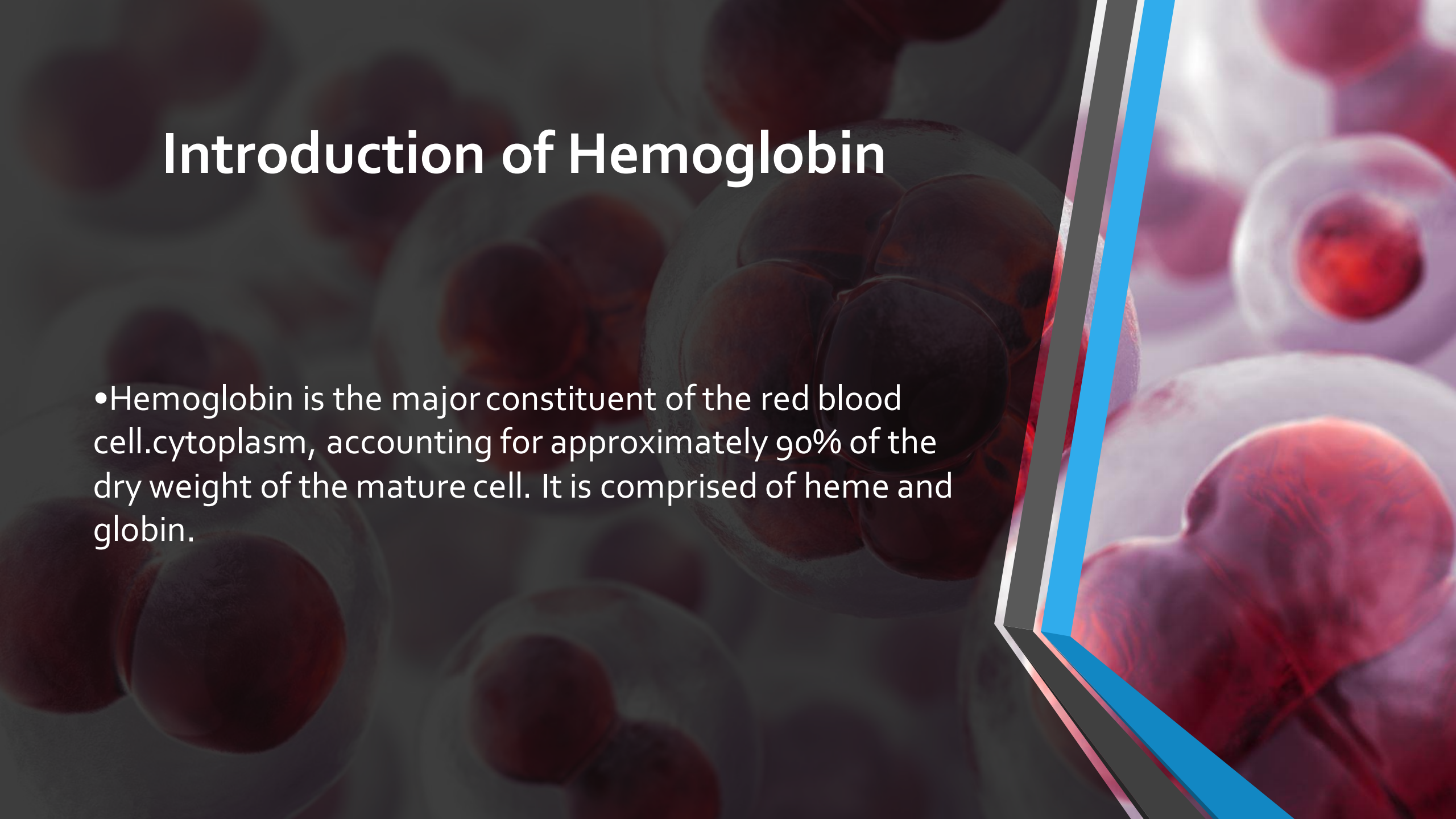
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# Introduction of Hemoglobin

- Hemoglobin is the major constituent of the red blood cell cytoplasm, accounting for approximately 90% of the dry weight of the mature cell. It is comprised of heme and globin.



# What is hemoglobin estimation?

- A hemoglobin test measures the amount of hemoglobin in your blood. If a hemoglobin test reveals that your hemoglobin level is lower than normal it means you have a low red blood cell count (anemia). Anemia can have many different causes including vitamin deficiencies bleeding and chronic diseases.

# There are different method of hemoglobin estimation.

**A hemoglobin test may rely on different techniques including reagent based and reagent based and reagent less method or a variety of non invasive method.**

**1) Hemoglobincynide method.**

**2) Vanzetti's Azide methemoglobin.**

**3) Reagent less method.**

**4) Non invasive method.**

**5) Sahli's method.**

**6) Hematology analyzer.**

# Hemoglobin estimation by sahli's method

In 1976 Hermann sahli discovered this method for this reason this method called sahli's method.

## Normal range of Hb


men – 14 to 18 g/dl

New borns – 17 to 22 gm/dl

Women – 12 to 16 g/dl  
20 gm/dl

1 week of age – 15 to

Children – 11 to 13 gm/dl



# Sahli's Hematin method

## Principle

- Blood is mixed with an acid solution so that Hb is converted to brown colored acid hematin.
- Diluted with water till brown colour matches that of brown glass standard.
- Hb value is read directly from the scale.

# EQUIPMENTS

- Sahli's hemoglobinometer.
- Sahli's pipette (marked at 20 microliter or 0.02 ml).
- Stirrer.
- Dropping pipette.
- Reagents.
- N/10 hydrochloric acid.
- Distilled water.

# Procedure

## Place

- **Place N/10 HCL into Hb tube upto 2 grams.**

## Blood

- **Blood sample in sahli's Hb pipette upto 20 micro liter.**

## Add

- **Add blood sample to acid solution.**

## Allow

- **Allow to stand for 10 minutes.**

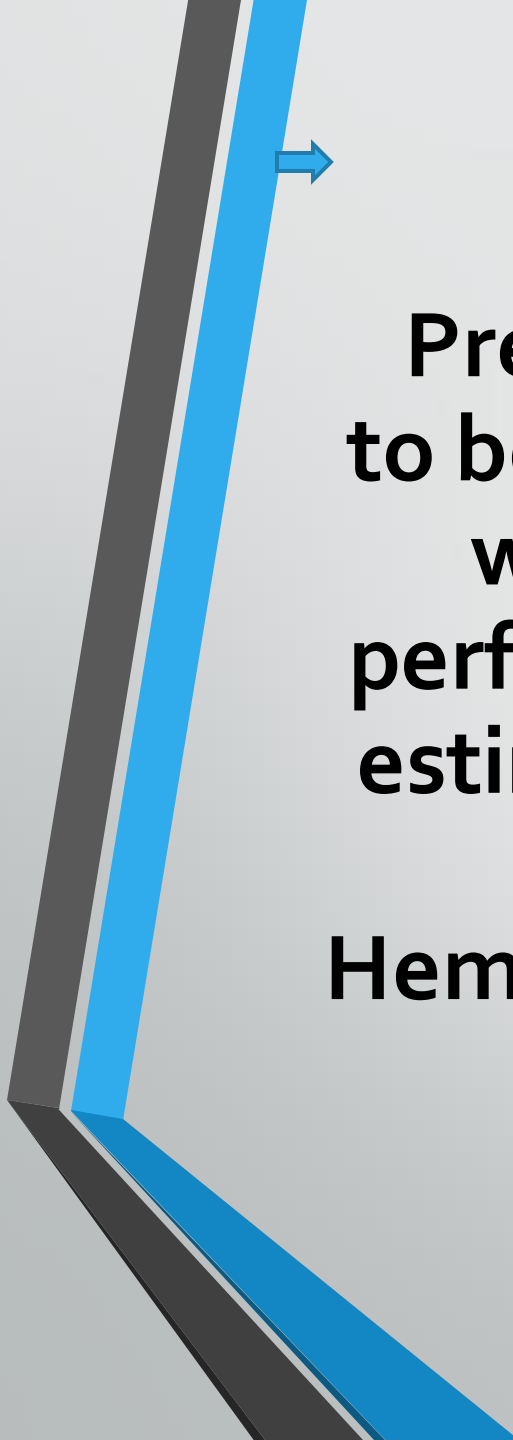
## Add

- **Add distilled water drop by drop till the colour of the solution matches to brown glass standerd.**

## Take

- **Take the reading of the lower meniscus from the graduated tube in grams.**





**Precaution  
to be taken  
while  
performing  
estimation  
of  
Hemoglobin**

- Sahli' apparatus especially the Hemoglobin pipette and Sahli's hemoglobin tube should be clean and dry before use.
- Suck the blood exactly up to the mark of 0.02ml and air bubbles should not be present in the pipette with blood.
- Mix well the acid and blood and wait for at least 10 minutes after adding the blood in acid.
- Add distilled water drop by drop and mix well after each dilution. Avoid over dilution of the content.
- The matching of colour should be done against the natural source of light or electric tube light to avoid any visual errors.

# Hematin sahli's method

## Advantage

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

## Disadvantage

- Longer time is required.
- Imperfect matching with brown glass.
- Carboxyhemoglobin, methemoglobin and sulfhemoglobin are not converted to acid hematin.
- Acid hematin is not stable.
- Source of light will influence the comparison of colours.



# Clinical significance of hemoglobin estimation.

Hemoglobin estimation gives a brief idea of the pathological conditions to the physician so that your physician can easily understand the cause of pathology and prescribe an effective treatment for it.

Thank

you

