

# Reticulocyte count



- They are immature red cells (young RBCs) normally present in BM and blood stream.
- They contain remnants of ribosomal (ribonucleic acid) RNA .

**Reticulocyte** is a stage between **normoblast and mature RBC**

- **in BM** → normoblast and retic
- **in blood** → mature RBC and retic



# Differences between mature RBCs and normoblast

- **Mature RBC:** doesn't have nucleus.
- **Normoblast:** has nucleus(DNA and RNA).
- **Reticulocyte :** has RNA filaments and it loses its nucleus and enter the circulation and becomes big

- To stain the reticulocytes use basic dyes (supravital stain) because ribosome is acidic has the ability to react with alkaline dye.

such as brilliant cresyl blue or new methylene blue to form a blue or purple precipitate of filaments and appear as diffused basophilic RBC (polychromatophilic RBC) .



- This dye stain the reticulocyte and heinz bodies
- This dye is a simple stain (not compound as leishman stain )
- More filaments → immature RBC (just going out from BM)



more mature



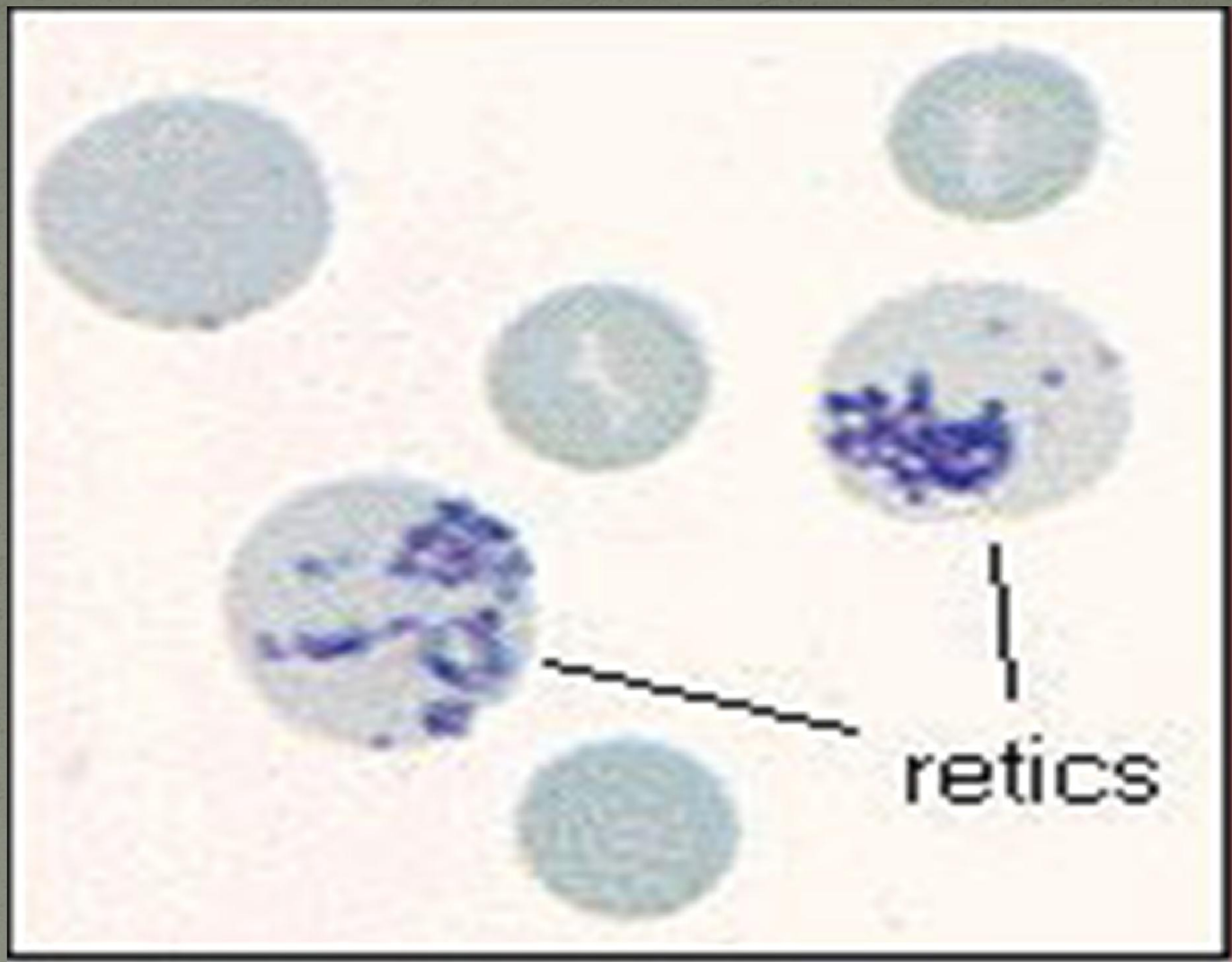
less mature

- Reticulocytes can be divided into 4 groups according to maturation and it takes 24 hrs in circulation
- (group I to group IV).
  - **The group I** ( more filaments & large clumps of reticulin gp)
  - **group IV** (few filaments & few reticulin gp).
- The ripening process takes 2-3 days.
- The nb of retic in peripheral blood is accurate reflection of erythropoietic activity



# Procedure:

- (un fixed preparation)
- 2 drops of stain+3 drops of EDTA blood sample
- Incubate 15- 20 min at 37°C





## Calculation:

$$[X \div (N \times Y)] \times 100$$

- X=Total counts of retic in 30 fields
- N=no of fields =30
- Y=average no of RBC in 4fields (1-10-20-30)

## Normal range:

- adult:0.5 – 2.5%
- infant: 2-5%

# High retic count (reticulocytosis):

- rapid blood loss
- Ineffective erythropoiesis e.g: thalassemia major
- Malignant disease
- Lack of erythropoietin
- in hemolytic anaemia as in  
hereditary elliptocytosis  
Hereditary spherocytosis



# Low reticulocyte count:

- aplastic anemia or iron deficiency anaemia
- BM failure.
- exposure to radiation
- a long-term (chronic) infection,
- by certain medications that damage the bone marrow.