



Department of Anesthesia  
Techniques



# Reticulocyte count \*

## test

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## Lab 1

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- Reticulocytes are red blood cells that are still developing. They are also known as immature red blood cells contains remnant of ribosome and RNA which were present in large amount in the cytoplasm in the precursors which they were derived.
  - Reticulocytes are made in the bone marrow and sent into the bloodstream. About two days after they form, they develop into mature red blood cells.

- A reticulocyte count (retic count) measures the number of reticulocytes in the blood. If the count is too high or too low, it can mean a serious health problem, including anemia and disorders of the bone marrow ,liver and kidneys
- Other names: retic count, reticulocyte percent, reticulocyte index, reticulocyte production index, RPI.

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- **Purpose of testing:**
  - Reticulocyte count help in monitoring anemic patients under treatments
  - Determine the state of increased erythrocytes activity
  - Assess bone marrow activity check bone marrow function after chemotherapy or a bone marrow transplant.

## Condition of high and low count of reticulocytes

### **Increased reticulocytes:**

- Effective erythropoiesis

- Anaemic patient under treatment

- Hemolytic anemia:

- Blood loss or bleeding: If you lose a lot of blood or have chronic blood loss, your bone marrow may start making more reticulocytes Again,

## • **Decreased reticulocytes.**

- Ineffective erythropoiesis

- Hypoproliferative anemias- ex(chronic disease anemia ,Nutritional anemias and Aplastic anemia)

- Bone marrow failure, which may be caused by an infection or cancer.

- Kidney disease

- Cirrhosis, scarring of the liver

- **Principle of test**
- The peripheral blood sample is stained with supravital stain (brilliant cresyl blue or New methylene blue).
- These are **basic dyes** that have the ability to react with **ribosome** and **nucleic acids** of **reticulocytes** while it still alive.
- The nucleic acid-dye reaction form a **blue precipitate** of granules or **filaments**

## ● **Staining method**

- Deliver 2-3 drops of the dye solution into a 75x10 mm glass or plastic tube using Pasture pipet.
- Add twice the amount of the patients EDTA blood to the dye solution and mix.
- Keep the mixture for 37°C for 15-20 min.
- Resuspend the Red cells by gentle mixing.
- Make film on the slide in the usual way



## • Counting reticulocytes

1. Look into the slide area using 10x objective
2. Add a drop of oil
3. Move to 100x
4. Count all red cells (reticulocytes+ RBC) using a manual counter
5. Make sure not to count WBC (large nucleated cell)
6. The number of reticulocytes counted also on outside paper to be able to calculate.

## Calculations

-% retics= no. Of reticsx 100

Total no. Of red cells

-Total no. Of red cells= reticsand RBC in 10 fields.

-If the count of RBC is 200-25-/ filed

-meaning that in 5 filed we will have total of 1000RBC and retics

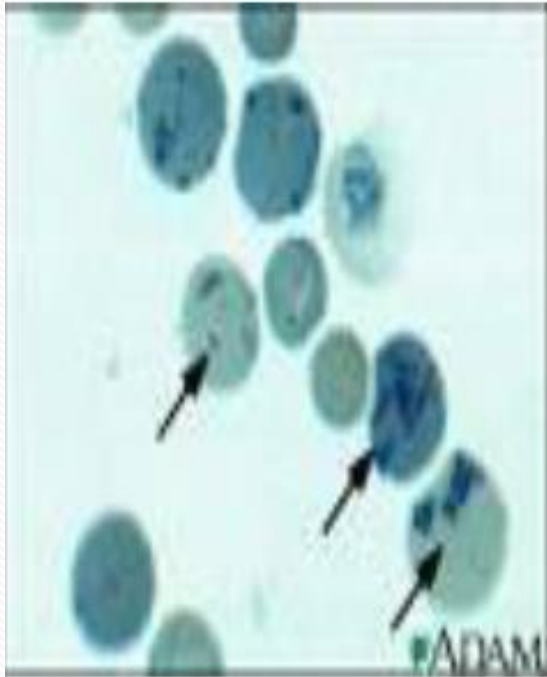
-Thus calculation will be the following:

-% retics= no. Reticsx 100 □ %retics= N

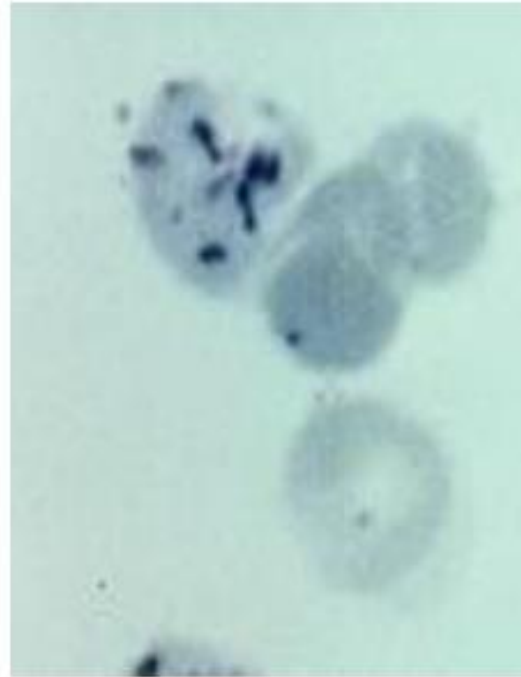
1000

10

***N.R in adults= 0.5% -1.5% N.R in new born = 2.5% -6%***



Reticulocytes 40x



Reticulocytes 100x



Reticulocytes =  
polychromatophilic