

# Blood Complete Picture

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# Blood Complete Picture (CP)

- Haemoglobin (Hb)
- Haematocrit (Hct, PCV)
- RBC count (TRBC)
- Absolute values
- RBC morphology
- Total Leukocyte Count (TLC)
- Differential Leukocyte Count (DLC)
- Reticulocyte count
- Platelet count
- ESR

# Blood CP

- Haemoglobin:
  - Adult males: 13.5-19.5 g/dL
  - Adult females: 11.5-16.5 g/dL
  - Children: 11.5-14.5 g/dl
- Packed Cell Volume (PCV):
  - Adult males: 0.40-0.54 L/L
  - Adult female: 0.37-0.47 L/L
- TRBC:
  - Adult male:  $4.5-6.5 \times 10^{12}/L$
  - Adult females:  $3.8-5.8 \times 10^{12}/L$

# Absolute Values

- Mean Cell Volume (MCV):
  - Adults: 76-96 fL
  - Infants: 100-120 fL
  - Children: 70-86 fL
- Mean Cell Haemoglobin (MCH):
  - Adults: 27-32 pg
  - Children: 24-30 pg
- Mean Cell Haemoglobin Concentration (MCHC):
  - Adults & Children: 30-35 g/dL

# Blood CP

- TLC: 4.0-11.0 X 10<sup>9</sup>/L
- DLC:
  - Neutrophils: 2.0-7.5 X 10<sup>9</sup>/L (40-75%)
  - Lymphocytes: 1.5-4.0 X 10<sup>9</sup>/L (20-40%)
  - Monocytes: 0.2-0.8 X 10<sup>9</sup>/L (2-10%)
  - Eosinophils: 0.04-0.4 X 10<sup>9</sup>/L (1-6%)
  - Basophils: <0.01-0.1 X 10<sup>9</sup>/L (<1%)
- Neucleated RBCs: None/100 WBCs

# % or absolute numbers

- Patient A:
  - TLC:  $10 \times 10^9/L$
  - Lymphocytes: 50%
  - Absolute lymphocyte count:  $5 \times 10^9/L$
- Patient B:
  - TLC:  $20 \times 10^9/L$
  - Lymphocytes: 50%
  - Absolute lymphocyte count:  $10 \times 10^9/L$

# Blood CP

- Reticulocytes:

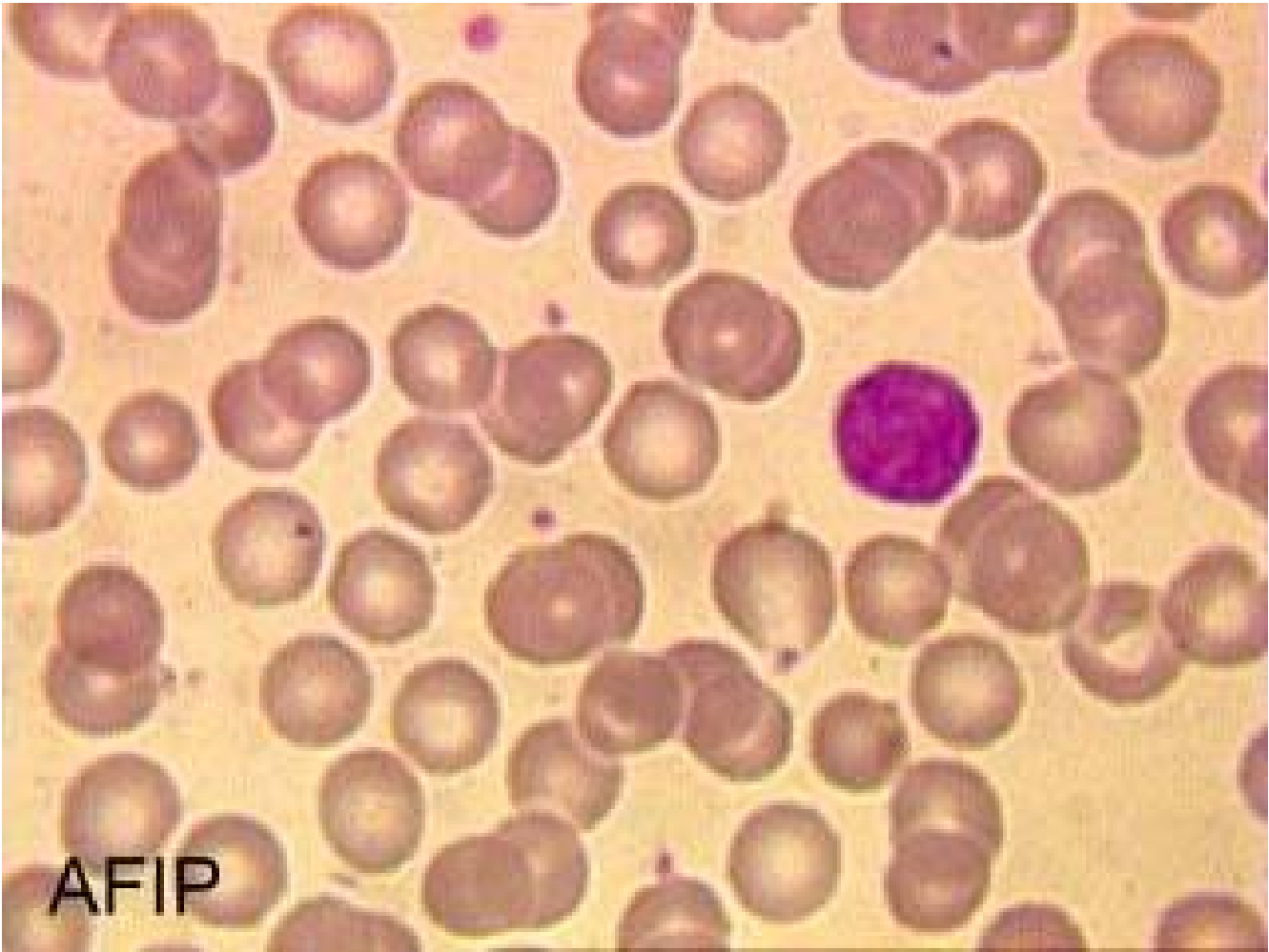
- Adults & children: 0.2-2.0% (25-85 X 10<sup>9</sup>/L)
- Infants (full term): 2-6% (mean 150 X 10<sup>9</sup>/L)

- Platelet count:

- Adults & Children: 150-400 X 10<sup>9</sup>/L
- Infants: 100-300 X 10<sup>9</sup>/L

- Erythrocyte Sedimentation Rate (ESR) (Westergren, 1 h):

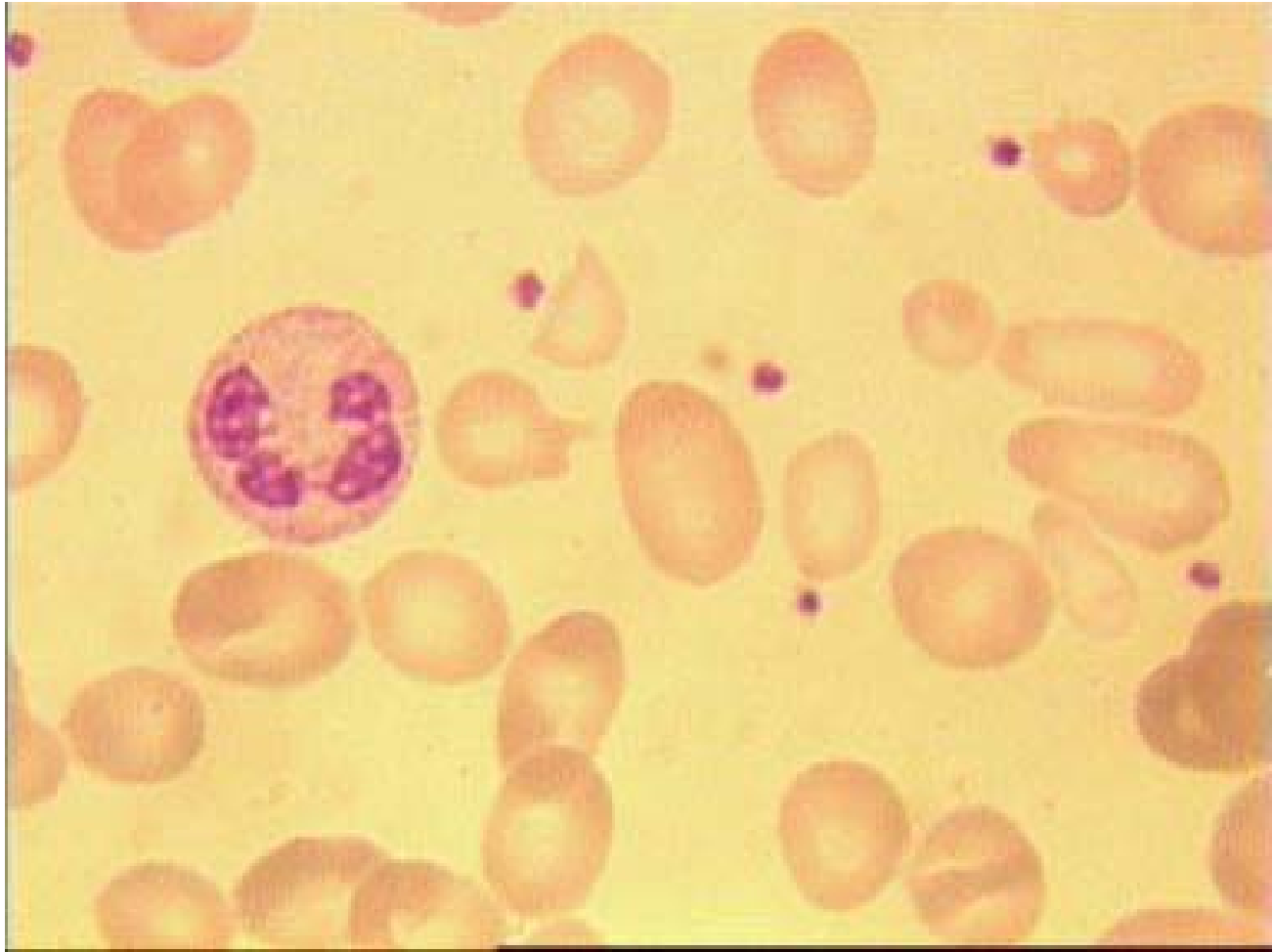
- Males (17-50 yrs): 1-7 mm
- Males (>50 yrs): 2-10 mm
- Females (17-50yrs): 3-9 mm
- Females (>50 yrs): 5-15 mm



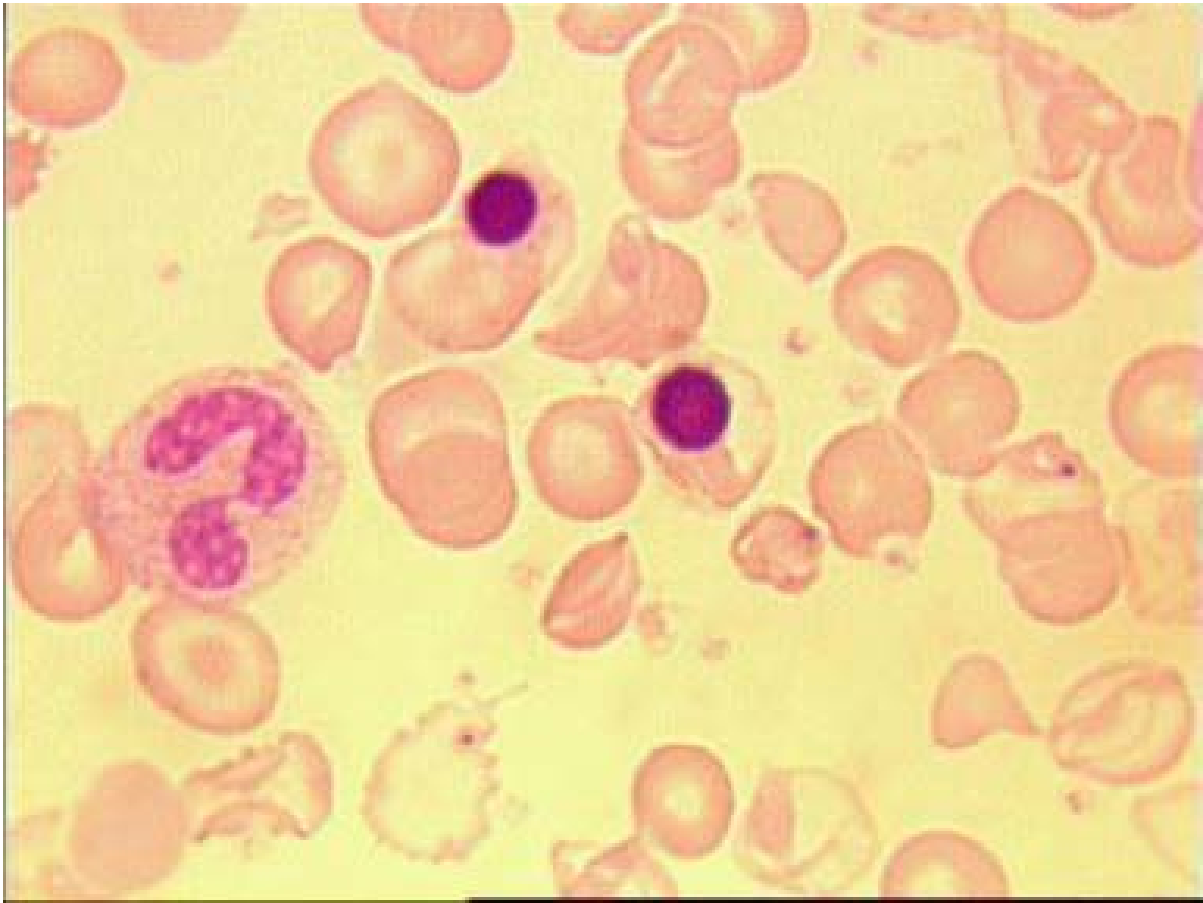
AFIP

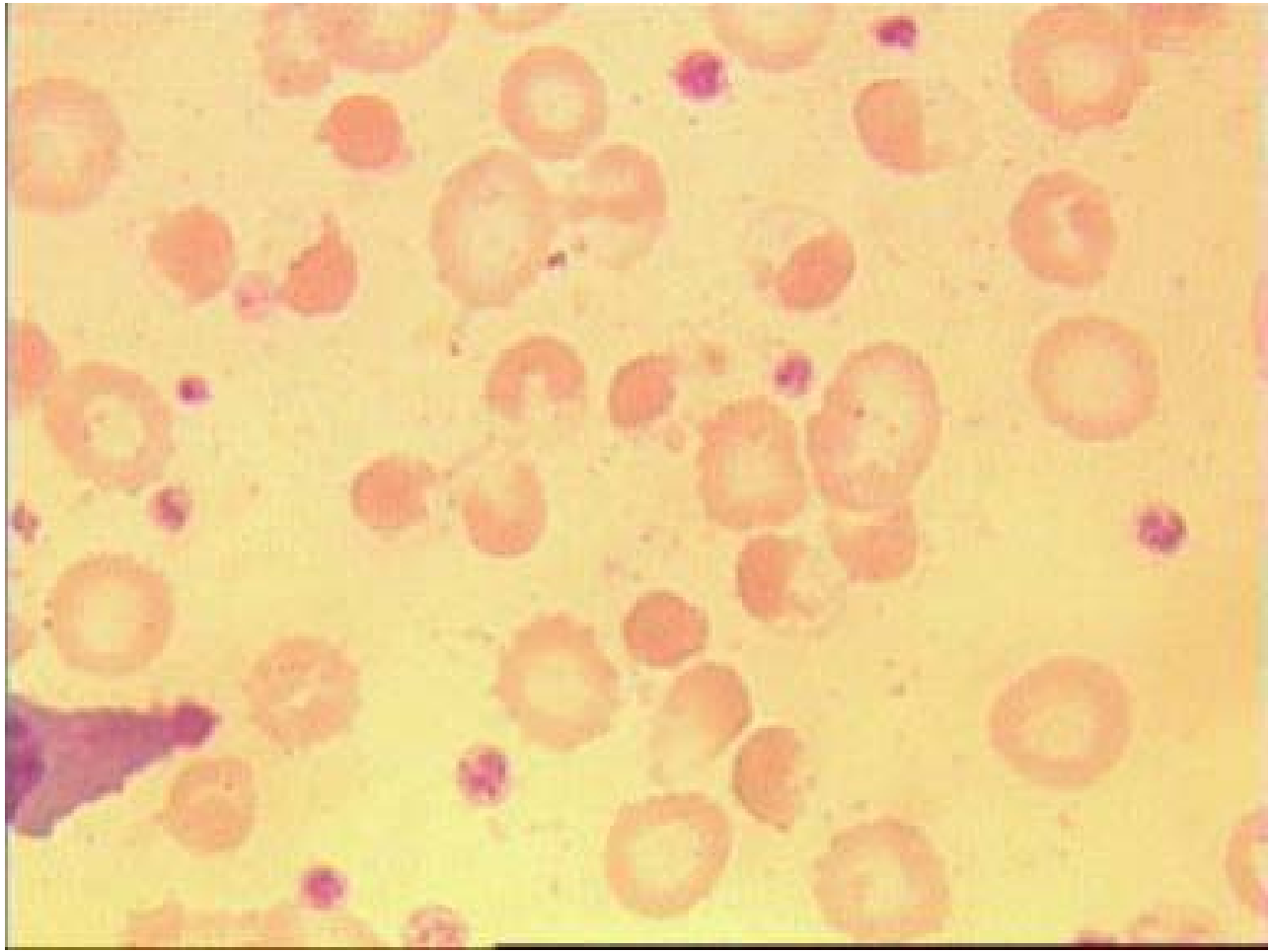


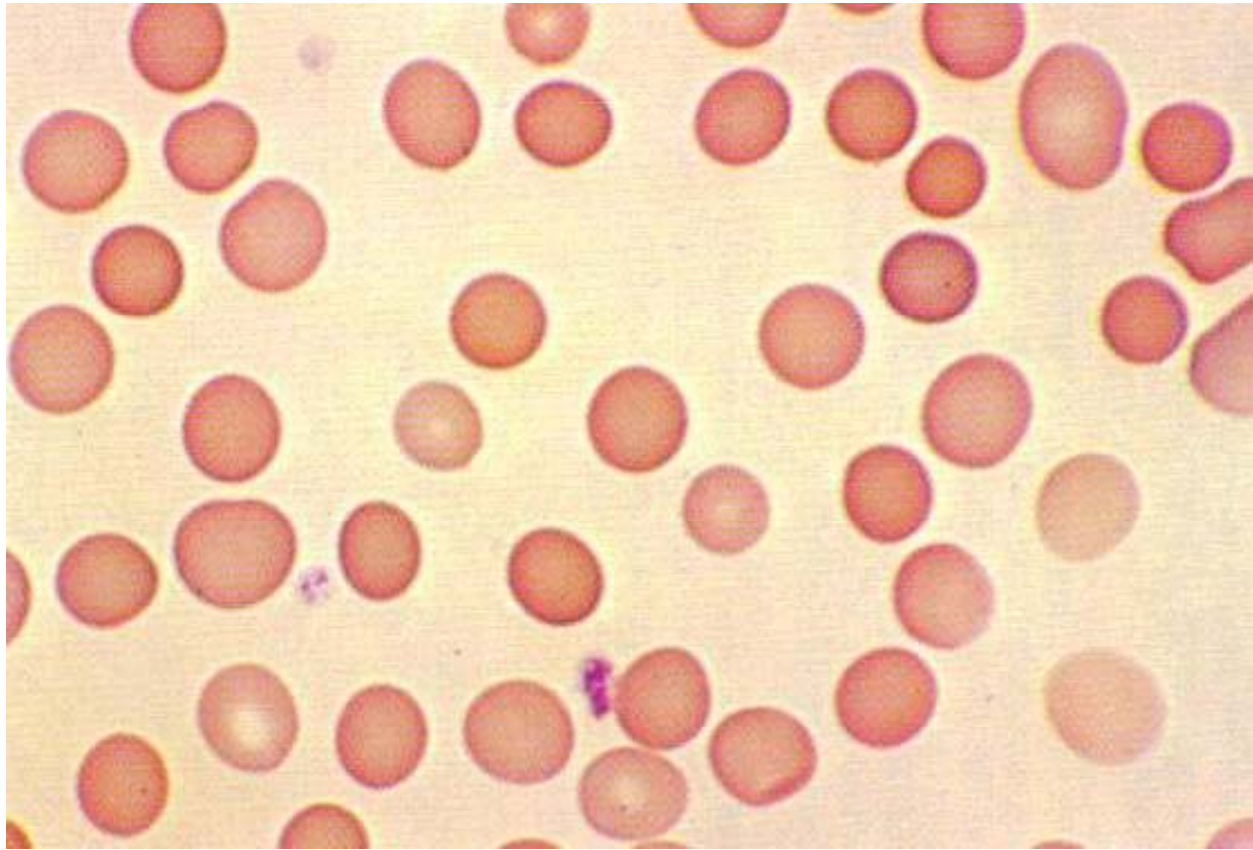


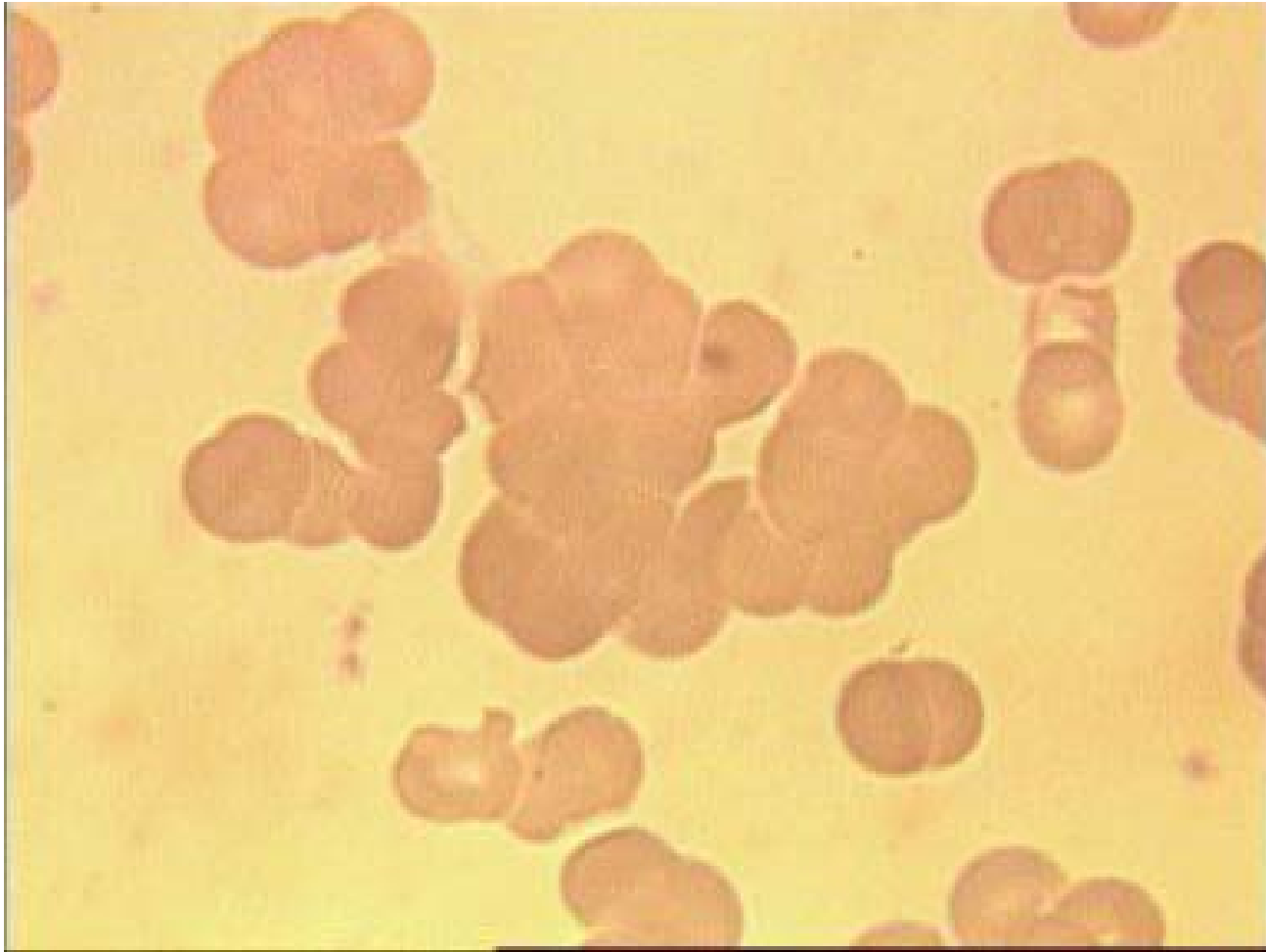


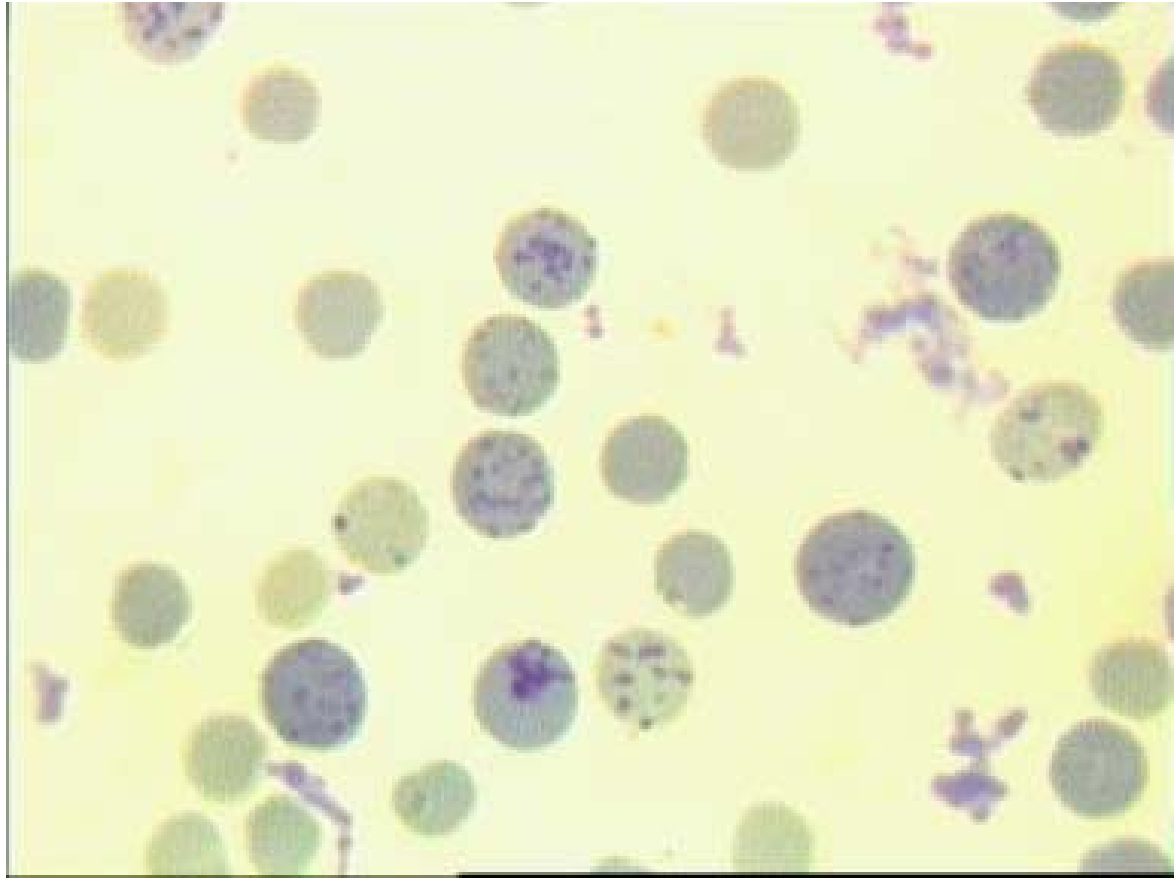




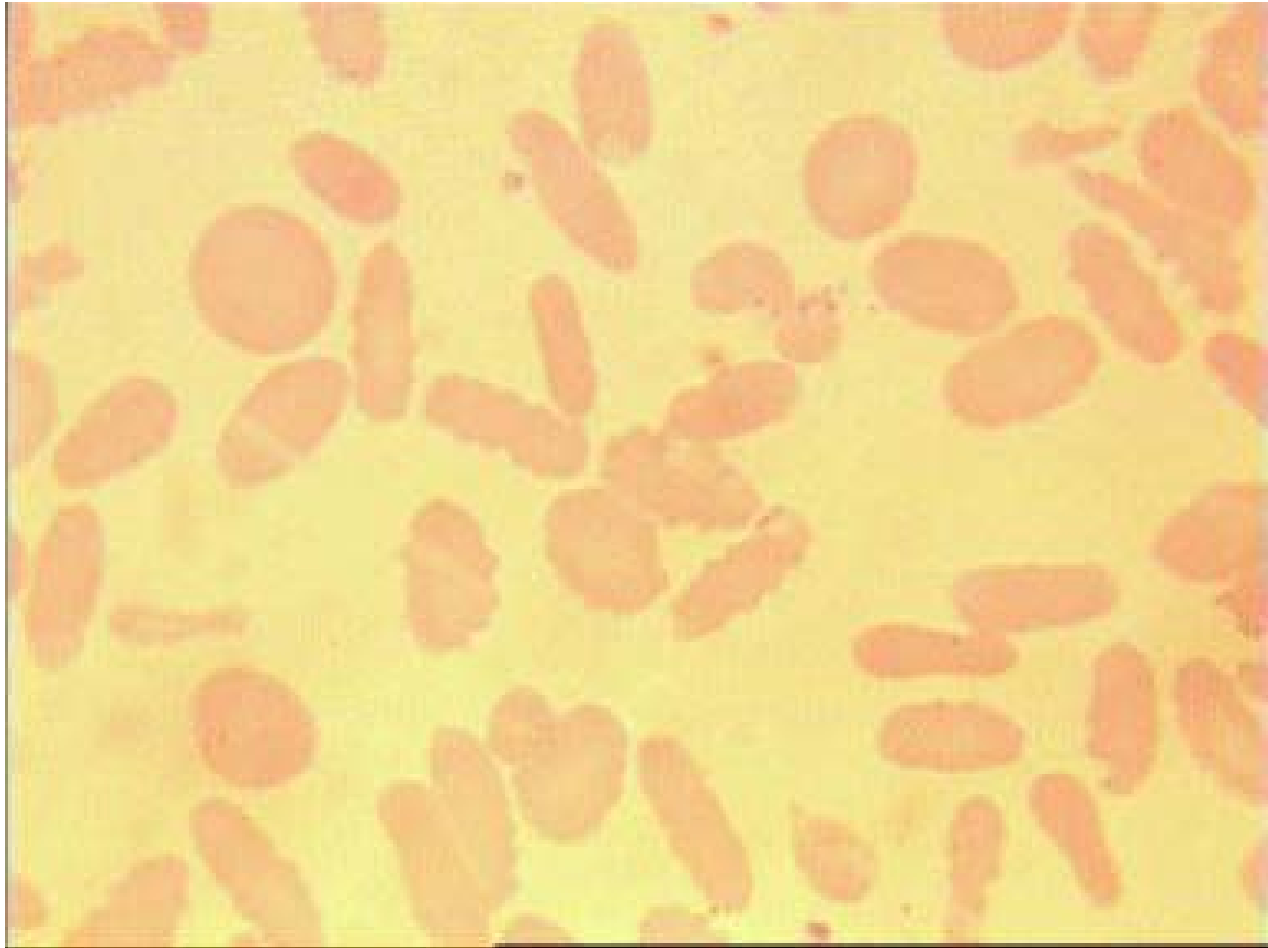


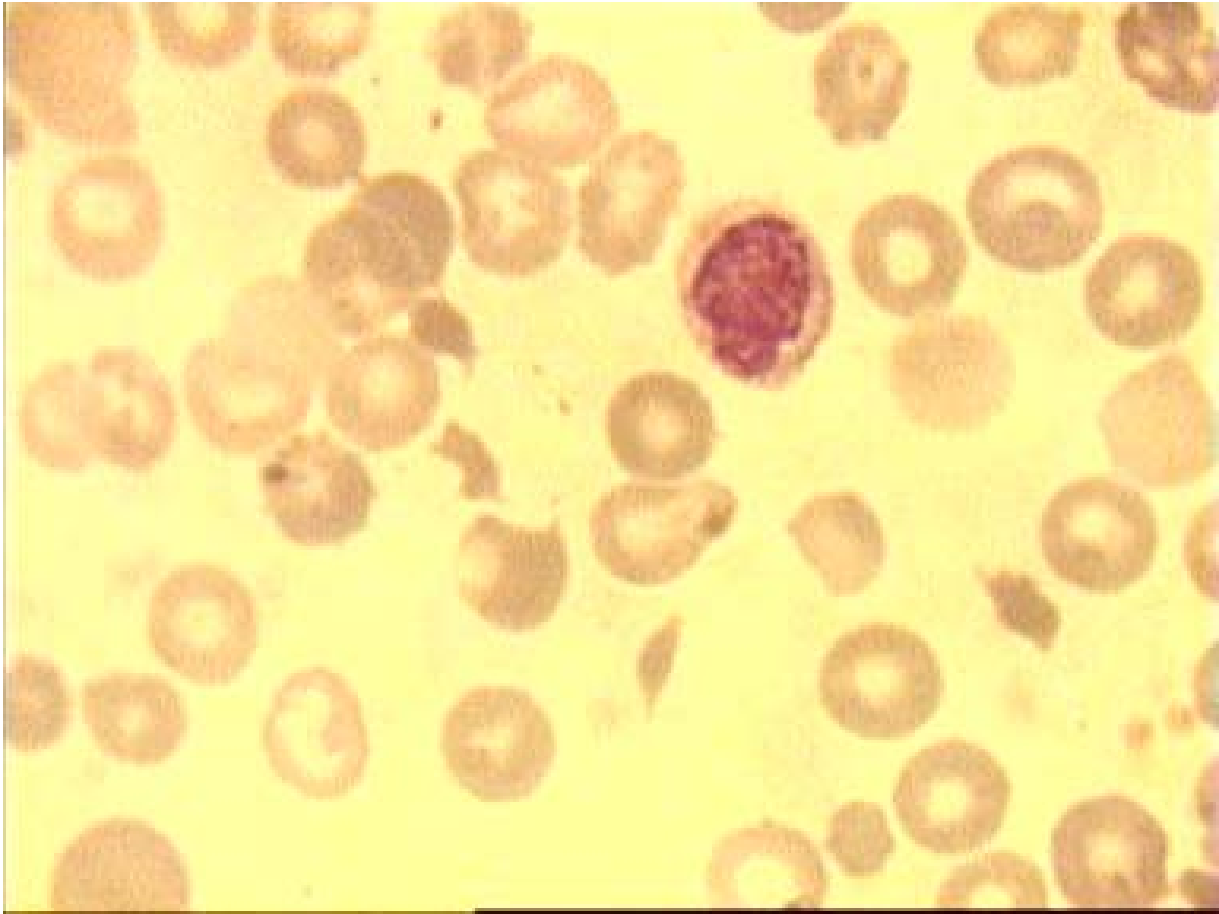


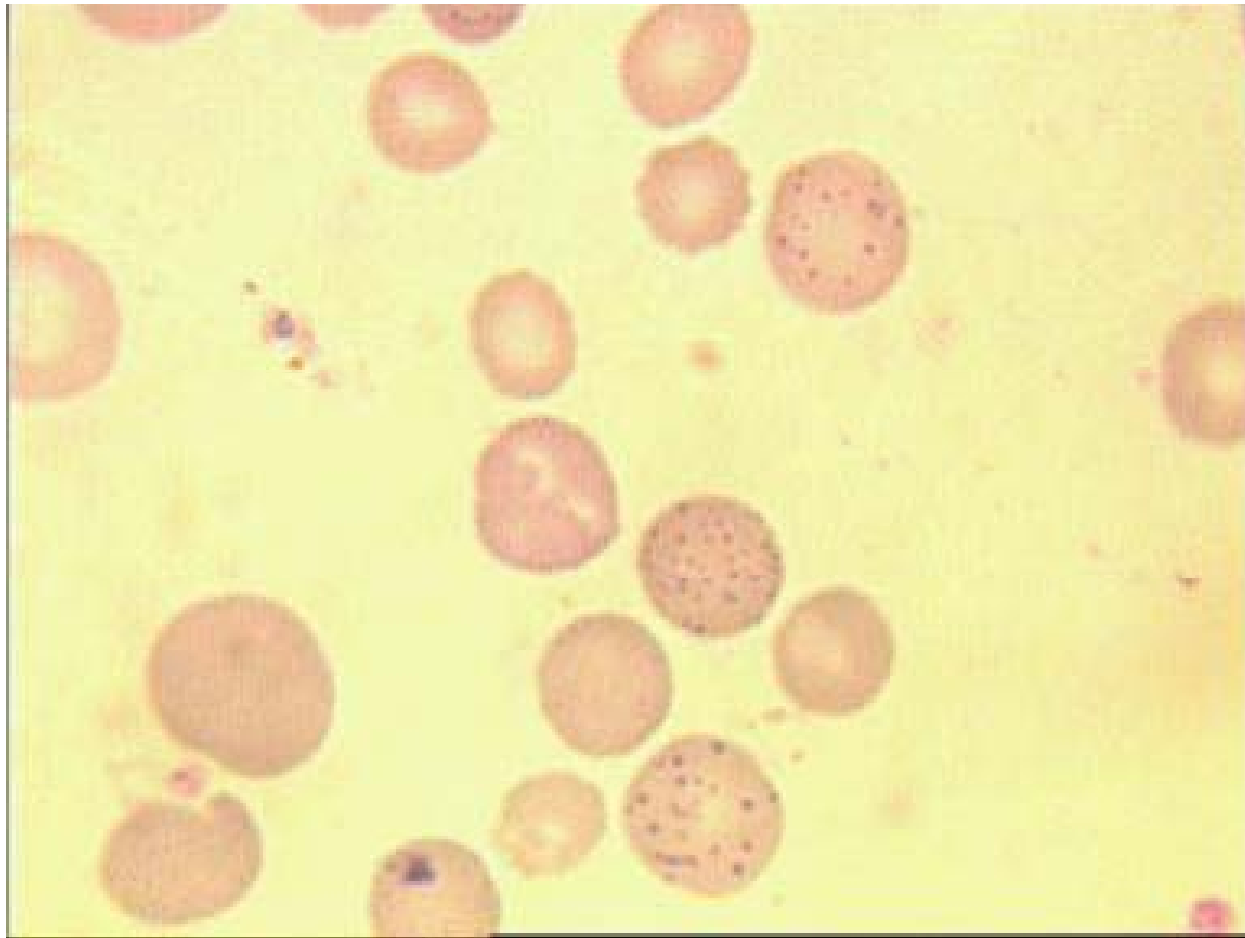


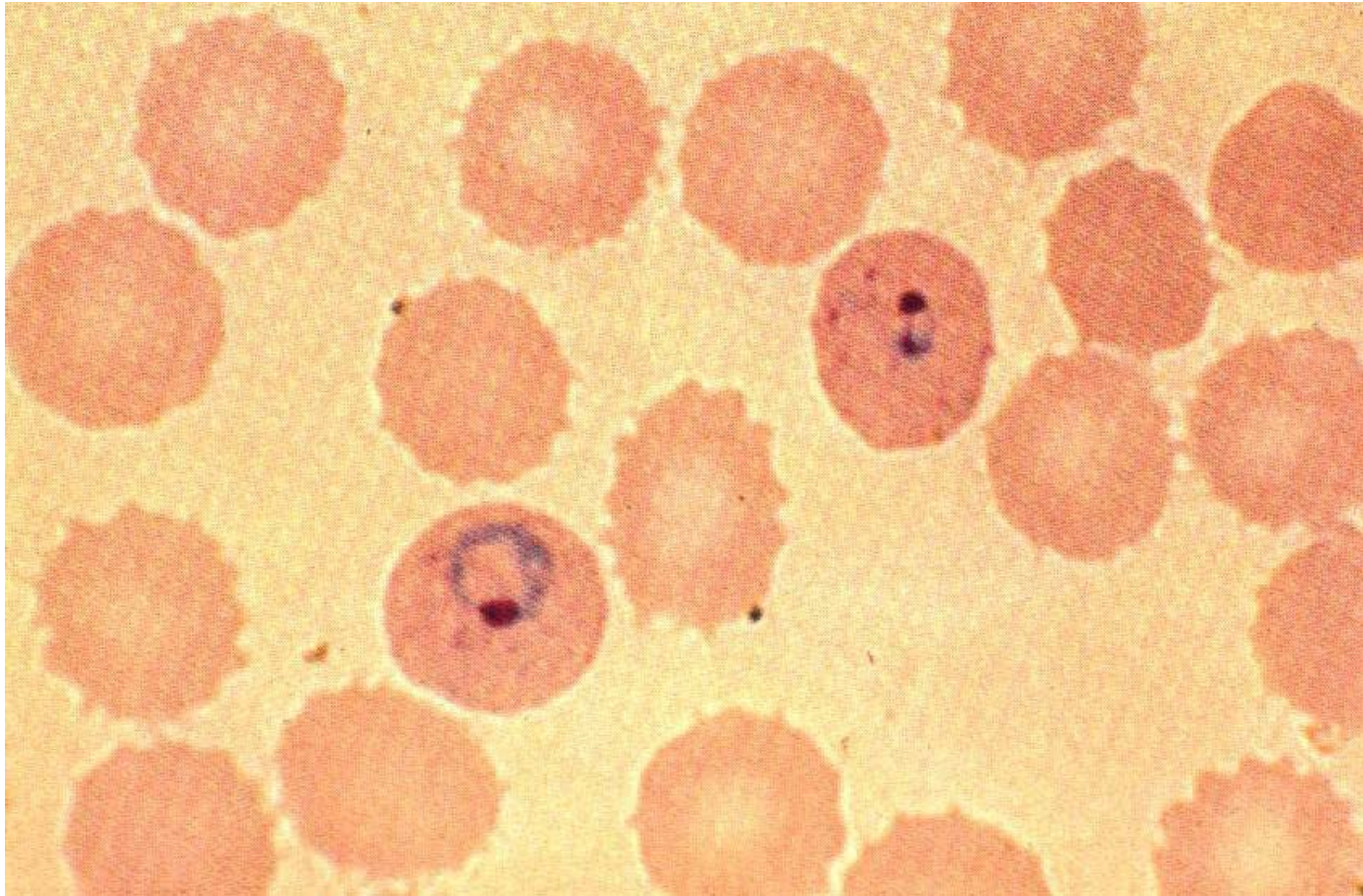


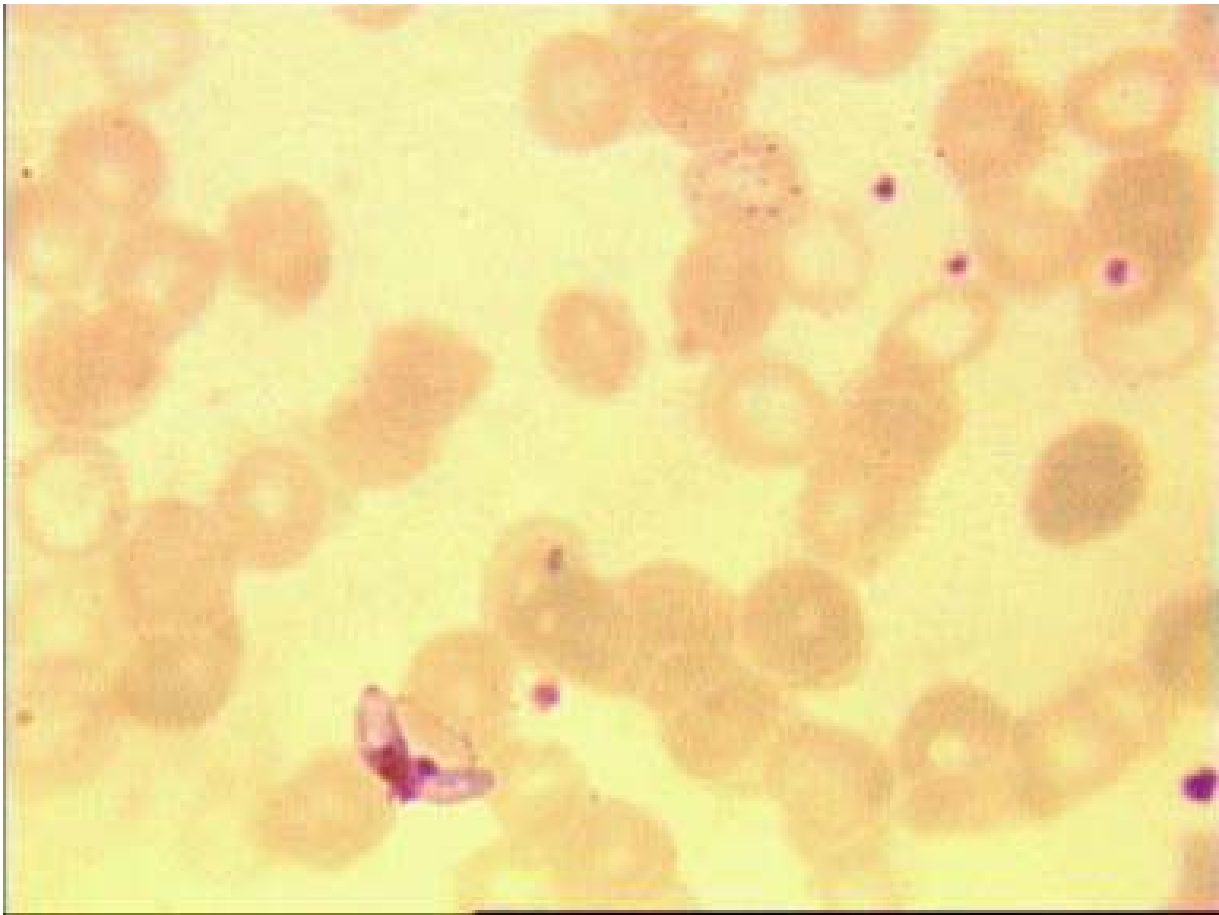


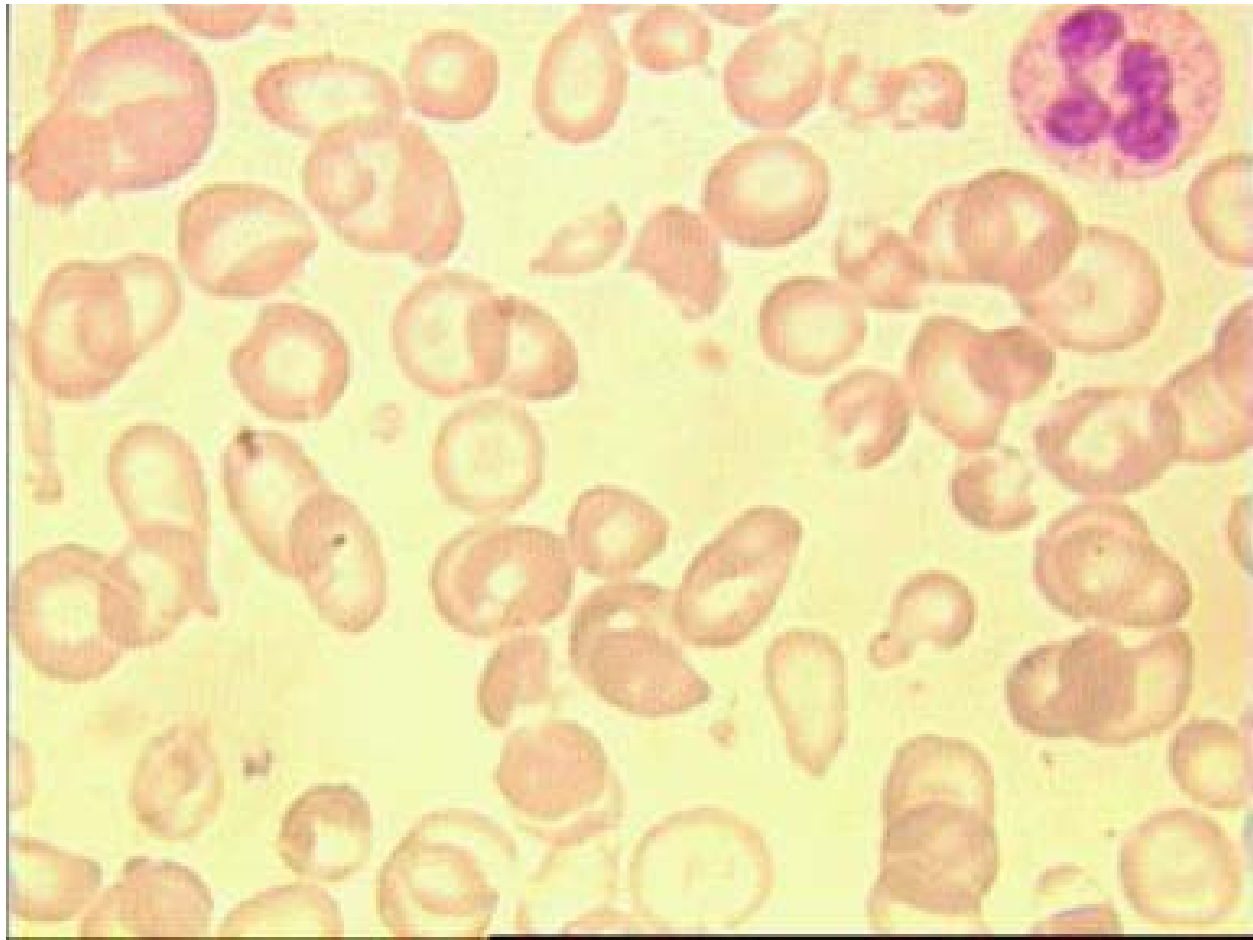




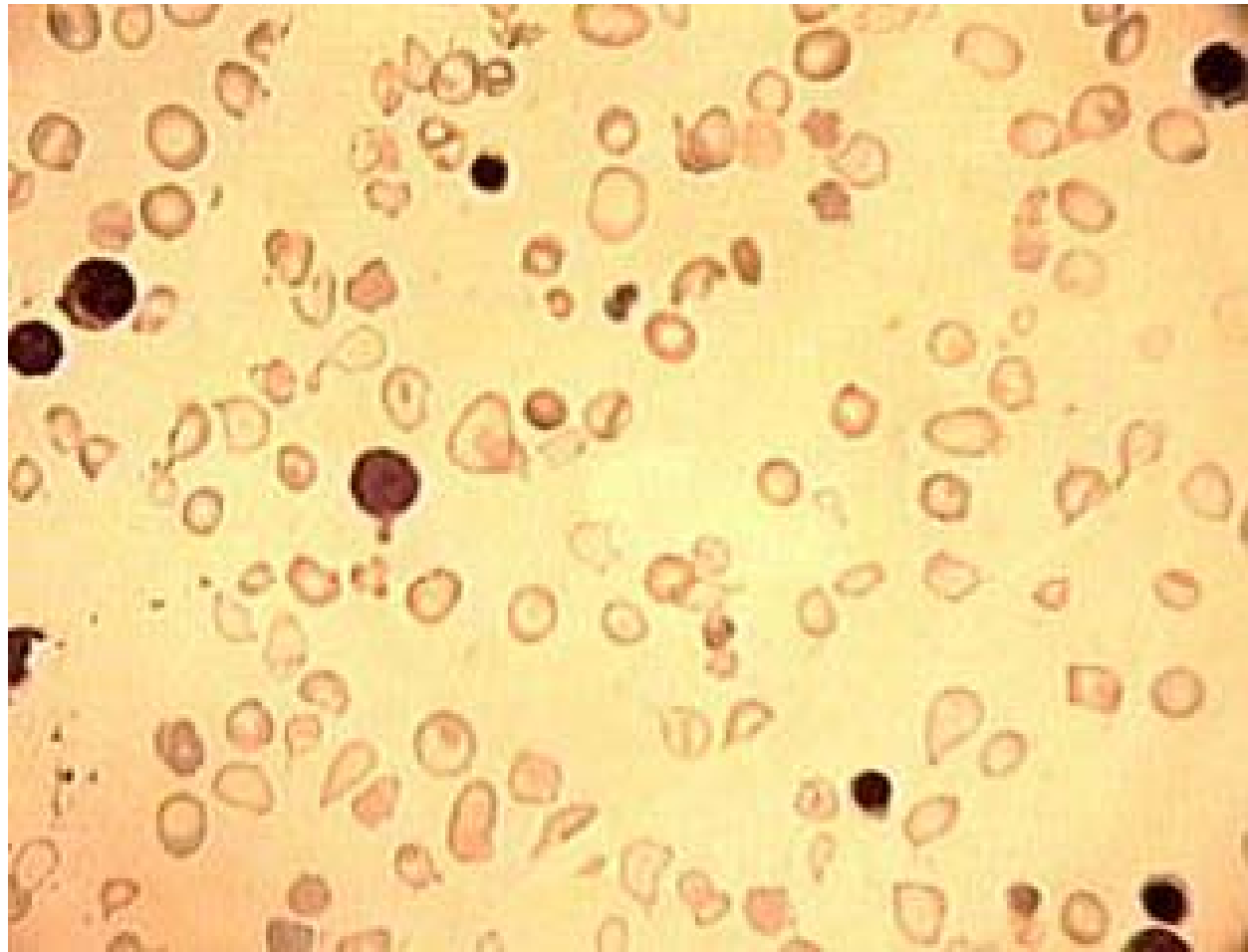




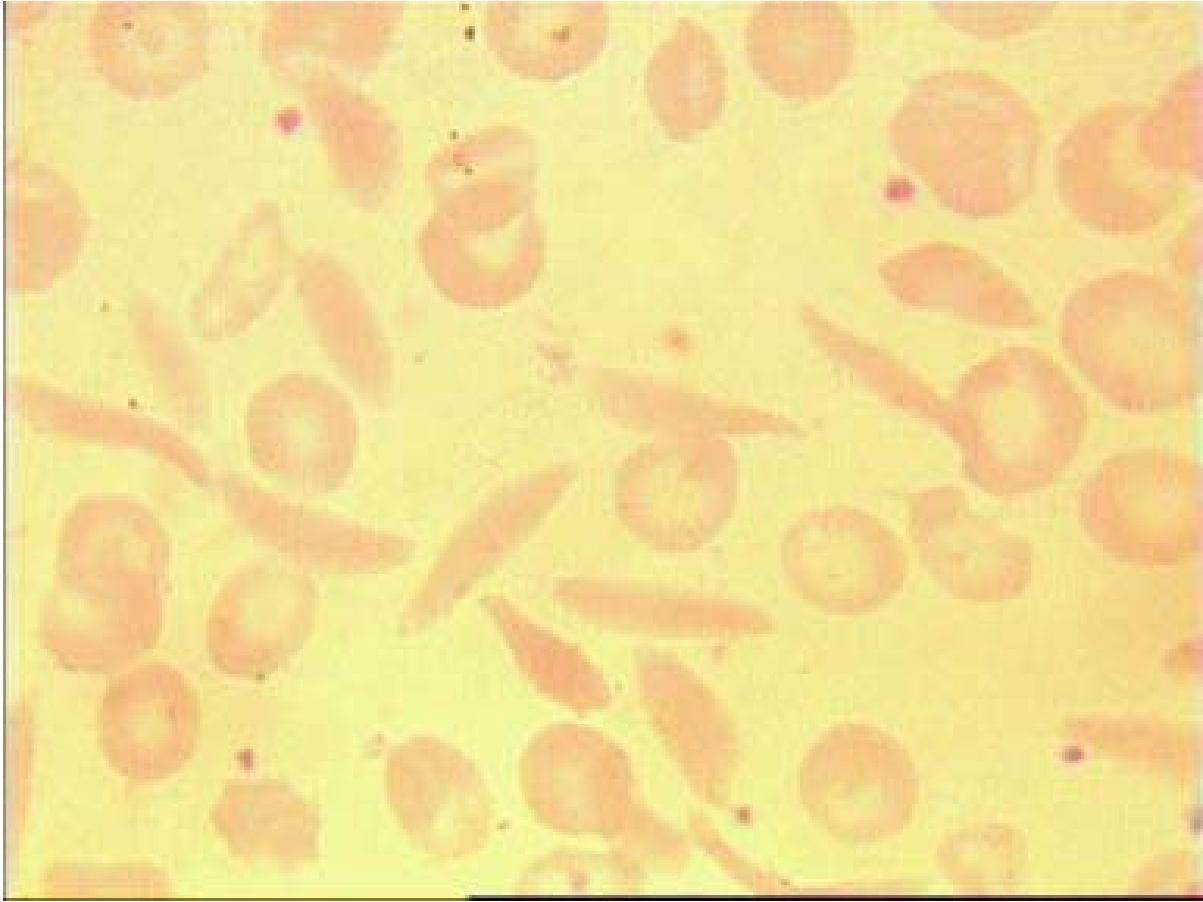


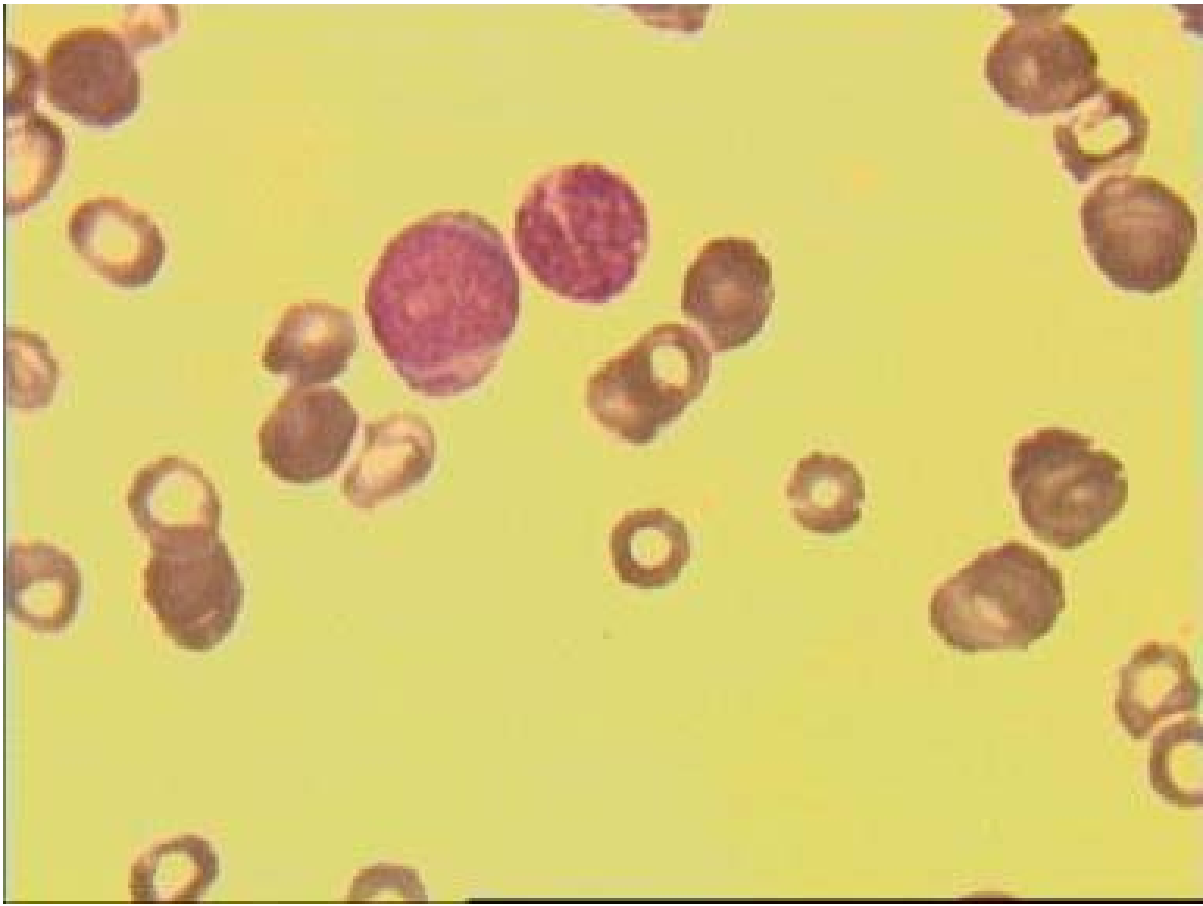


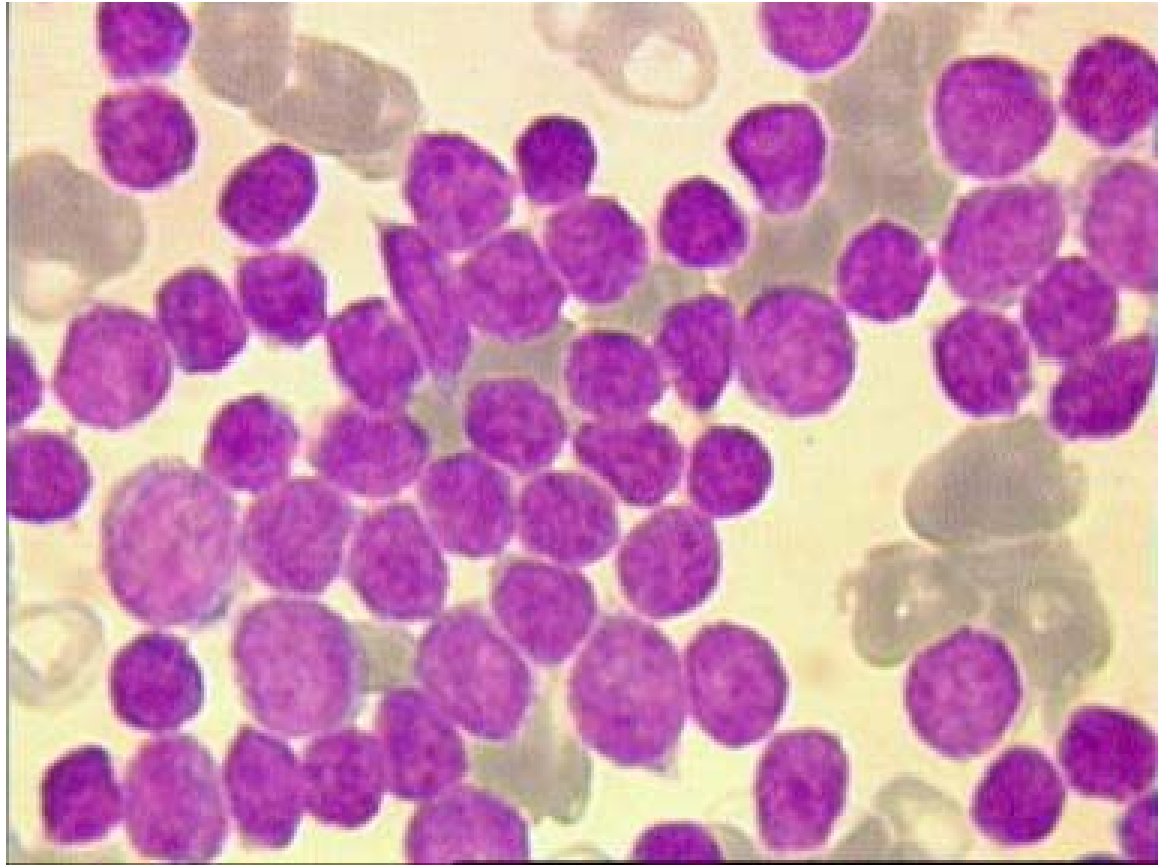


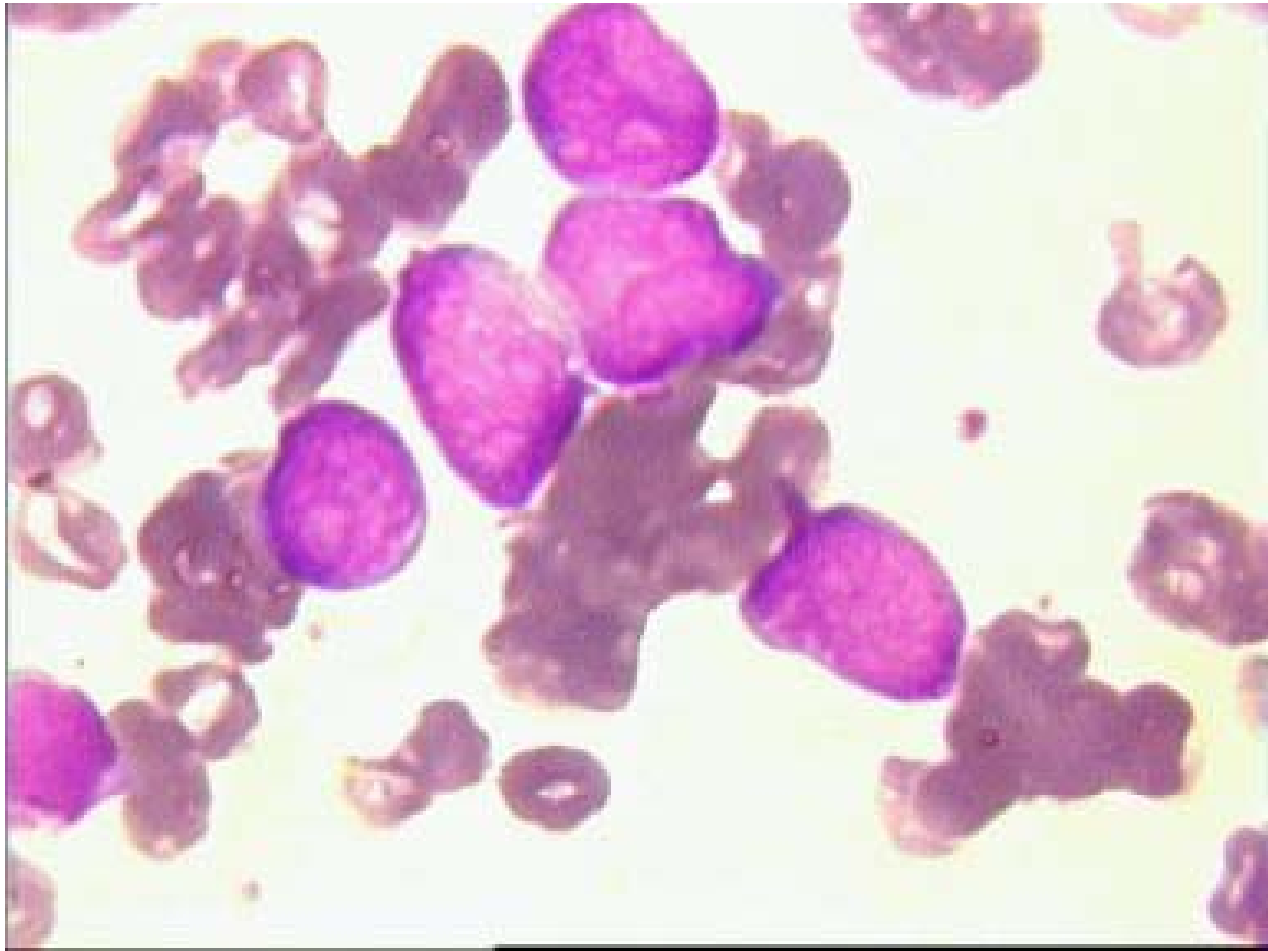


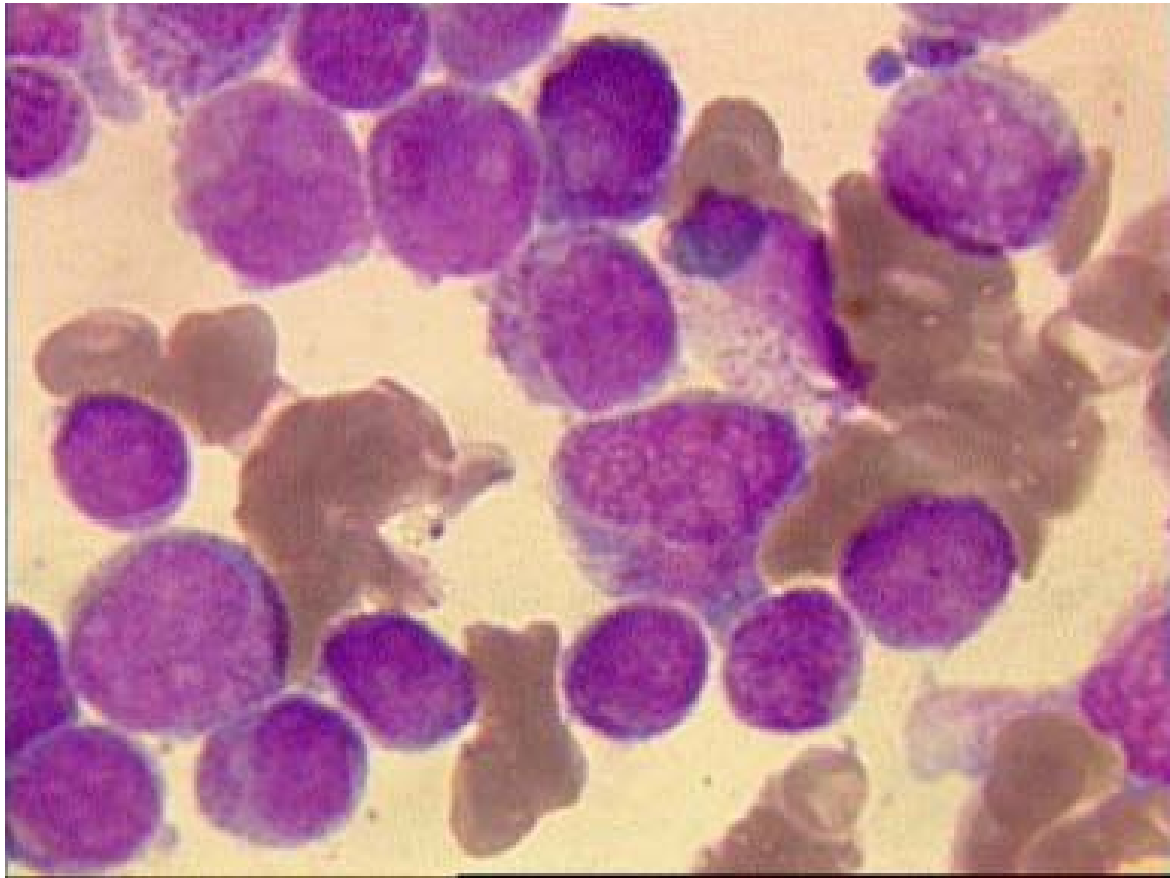


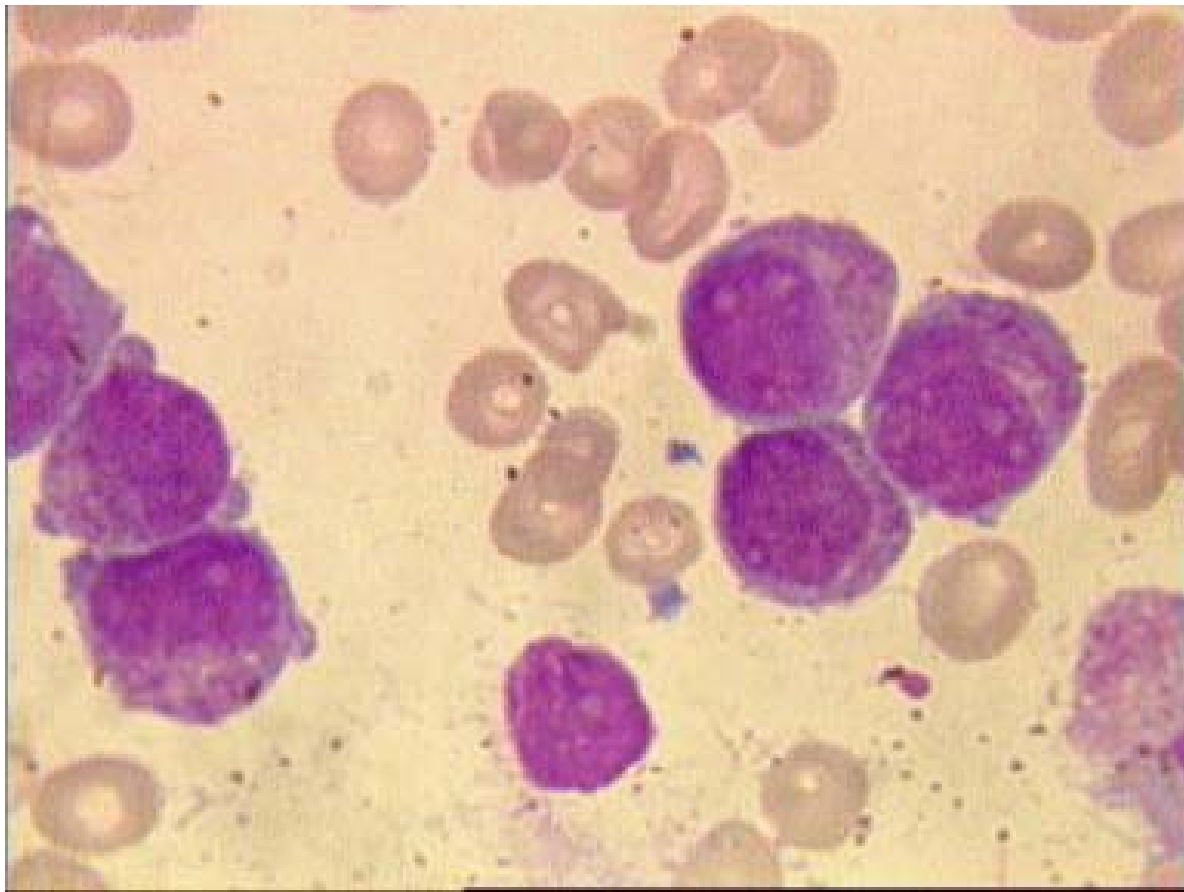


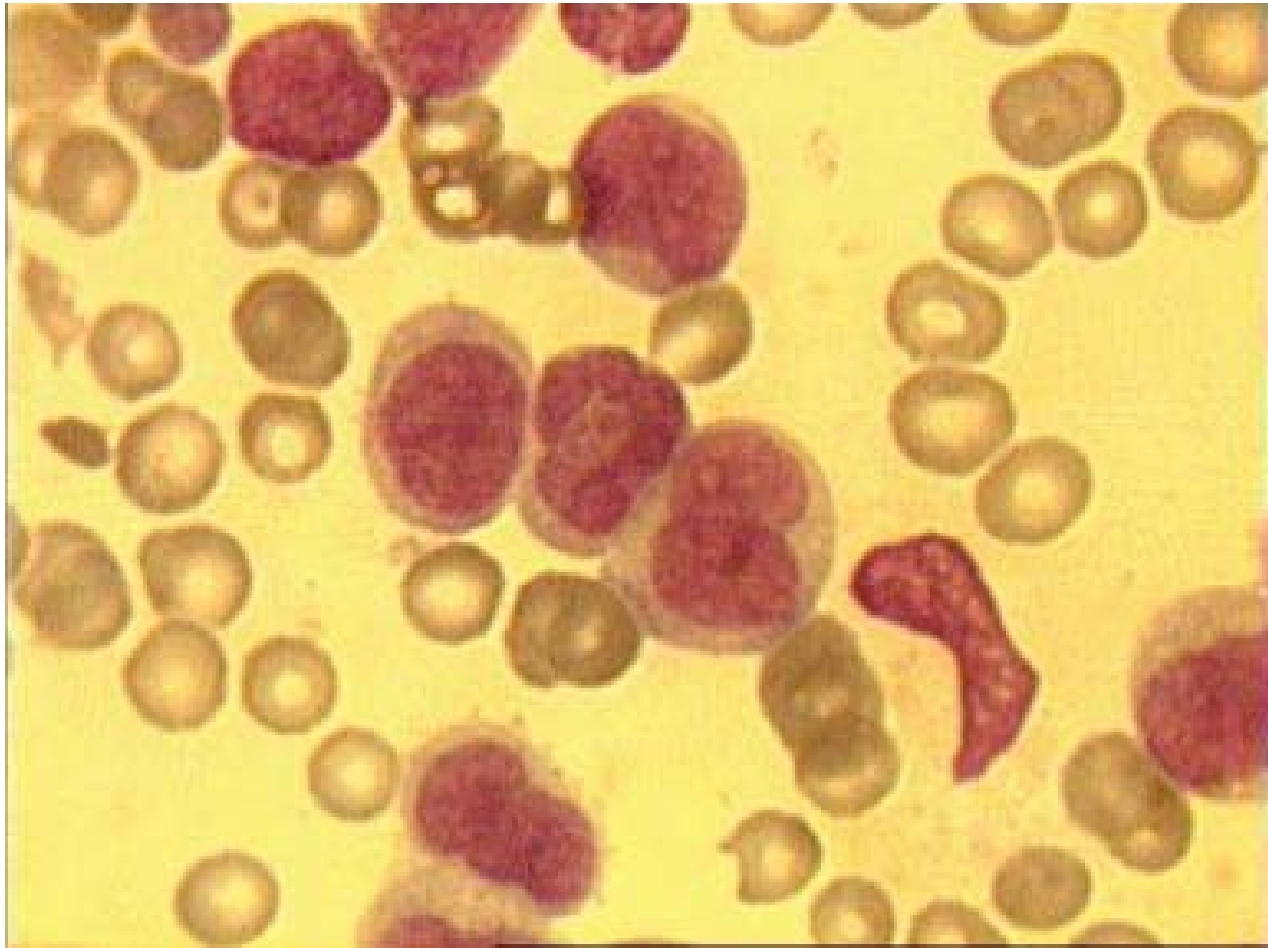


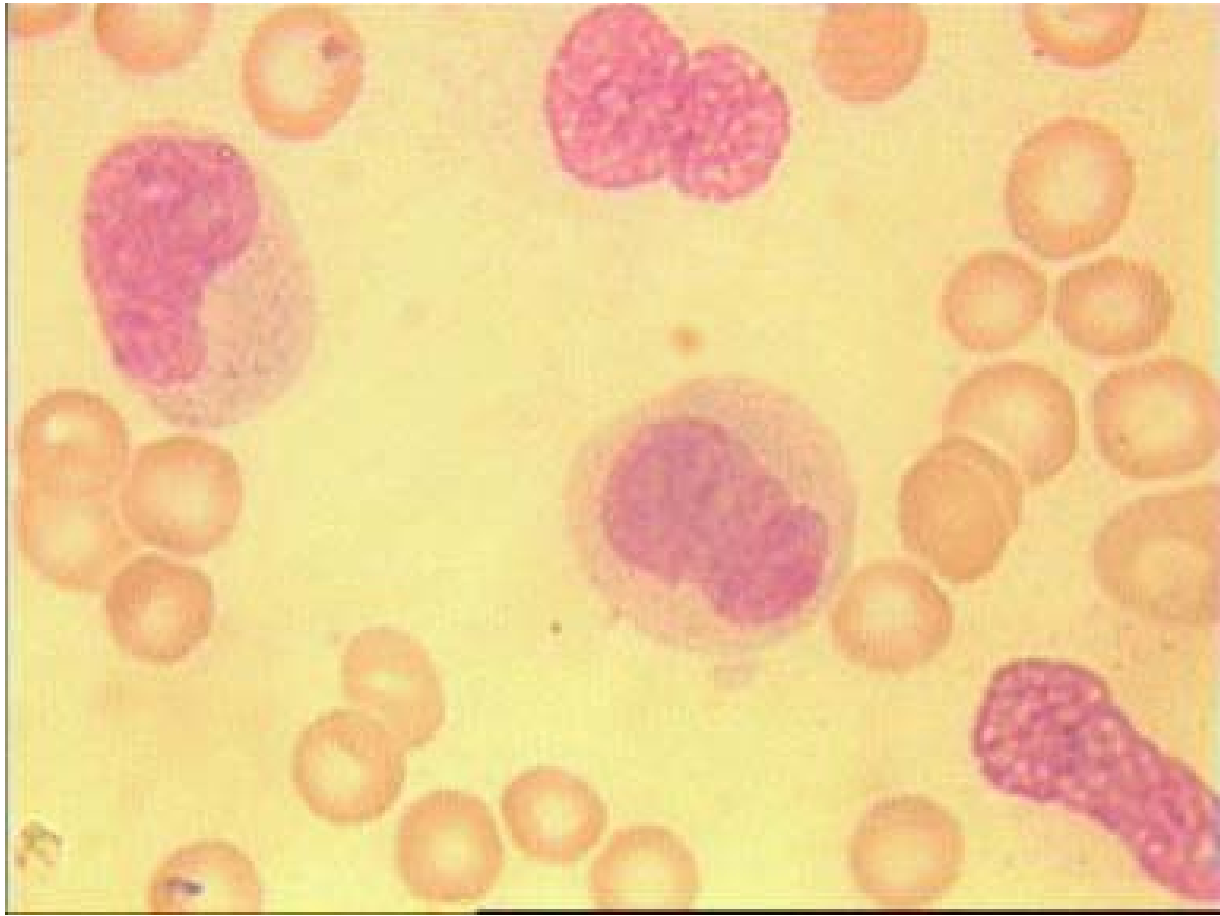






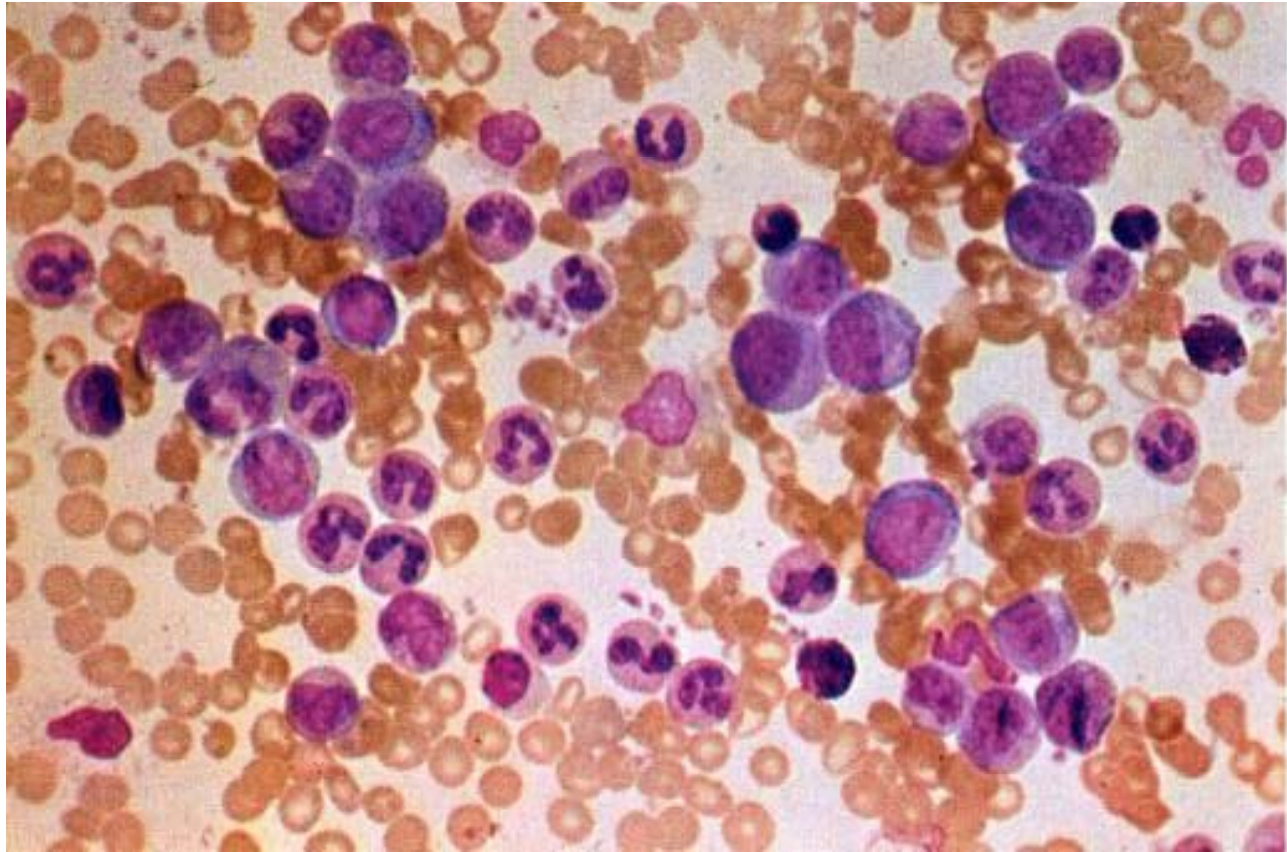


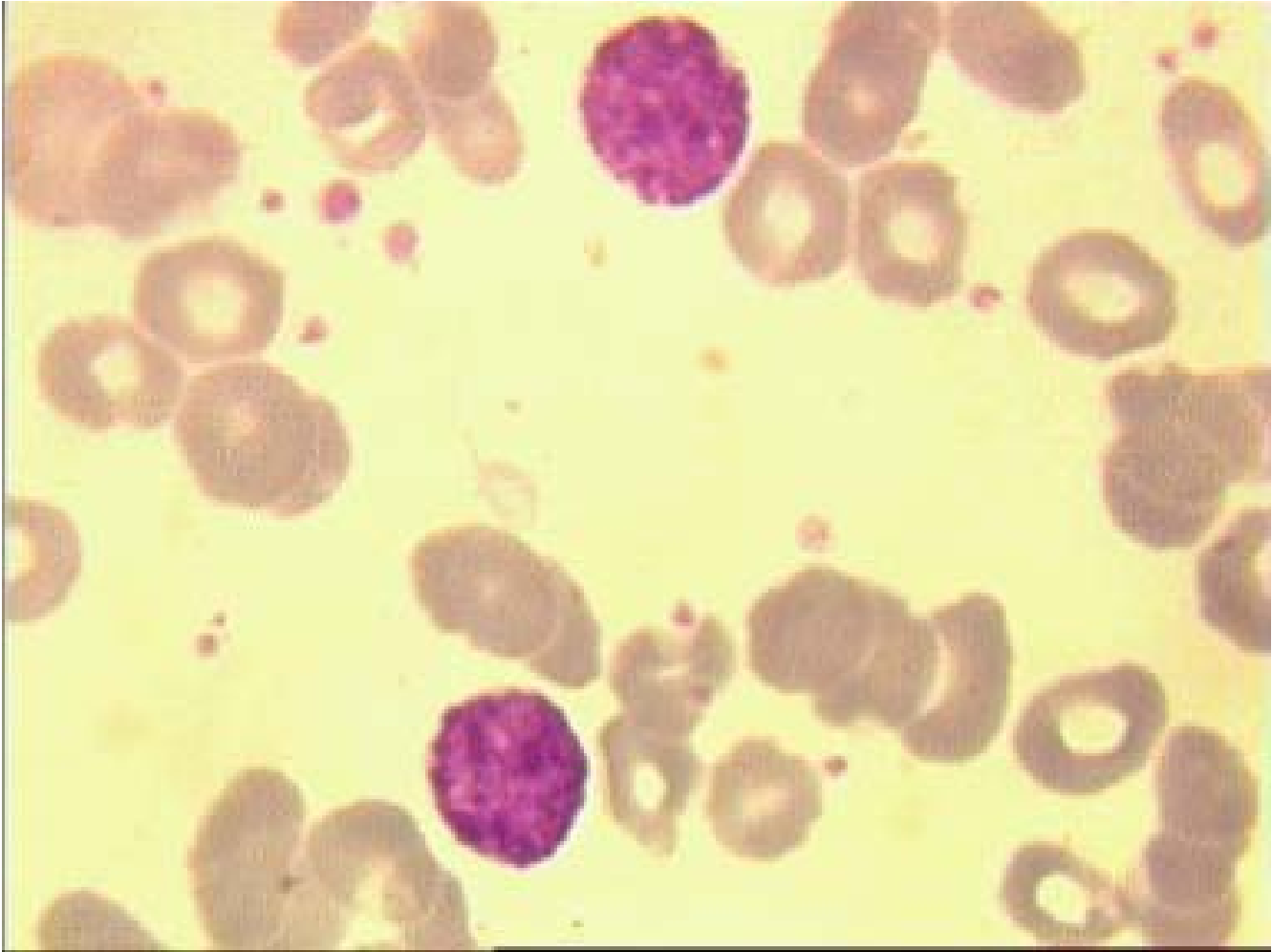


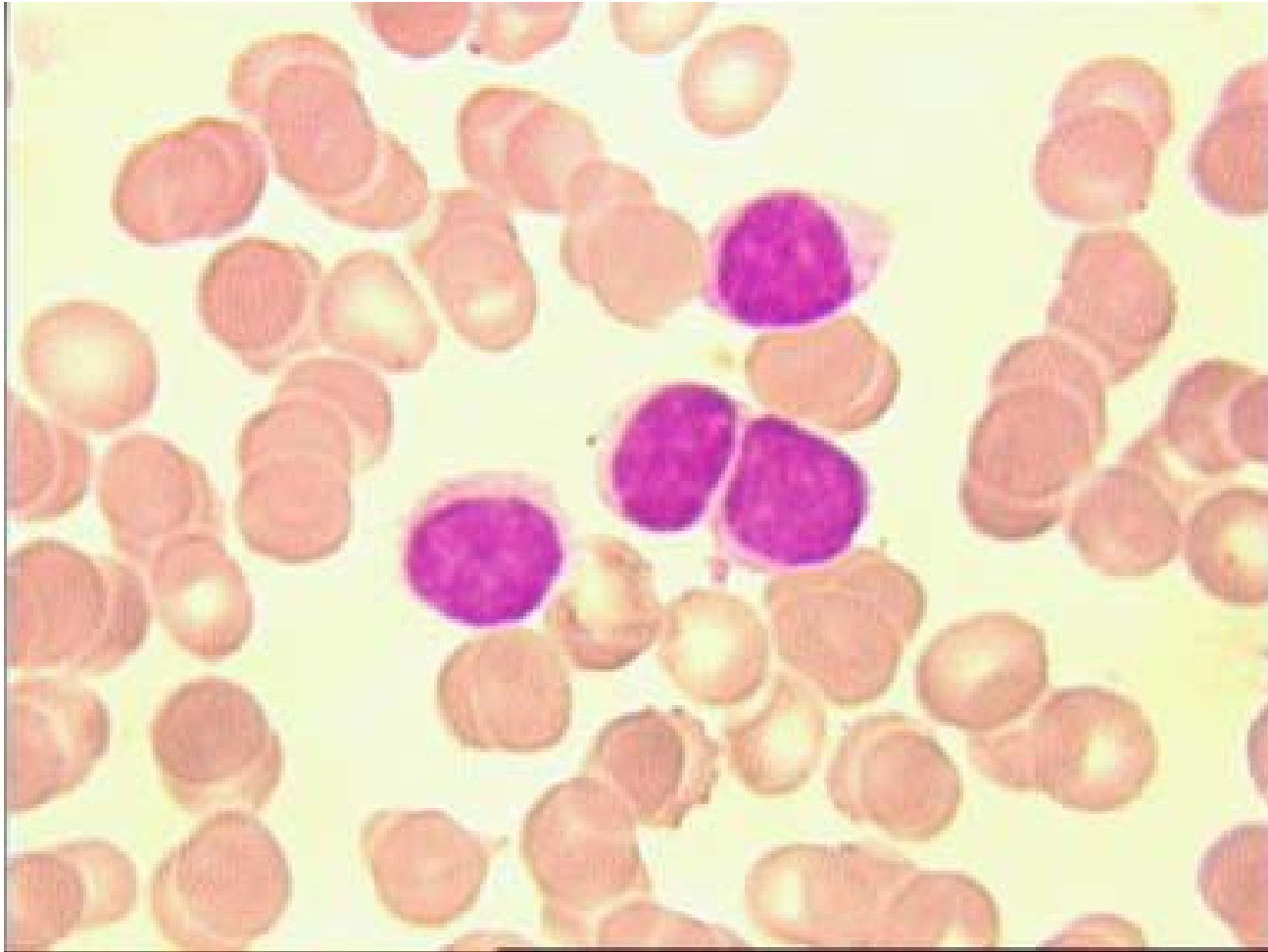


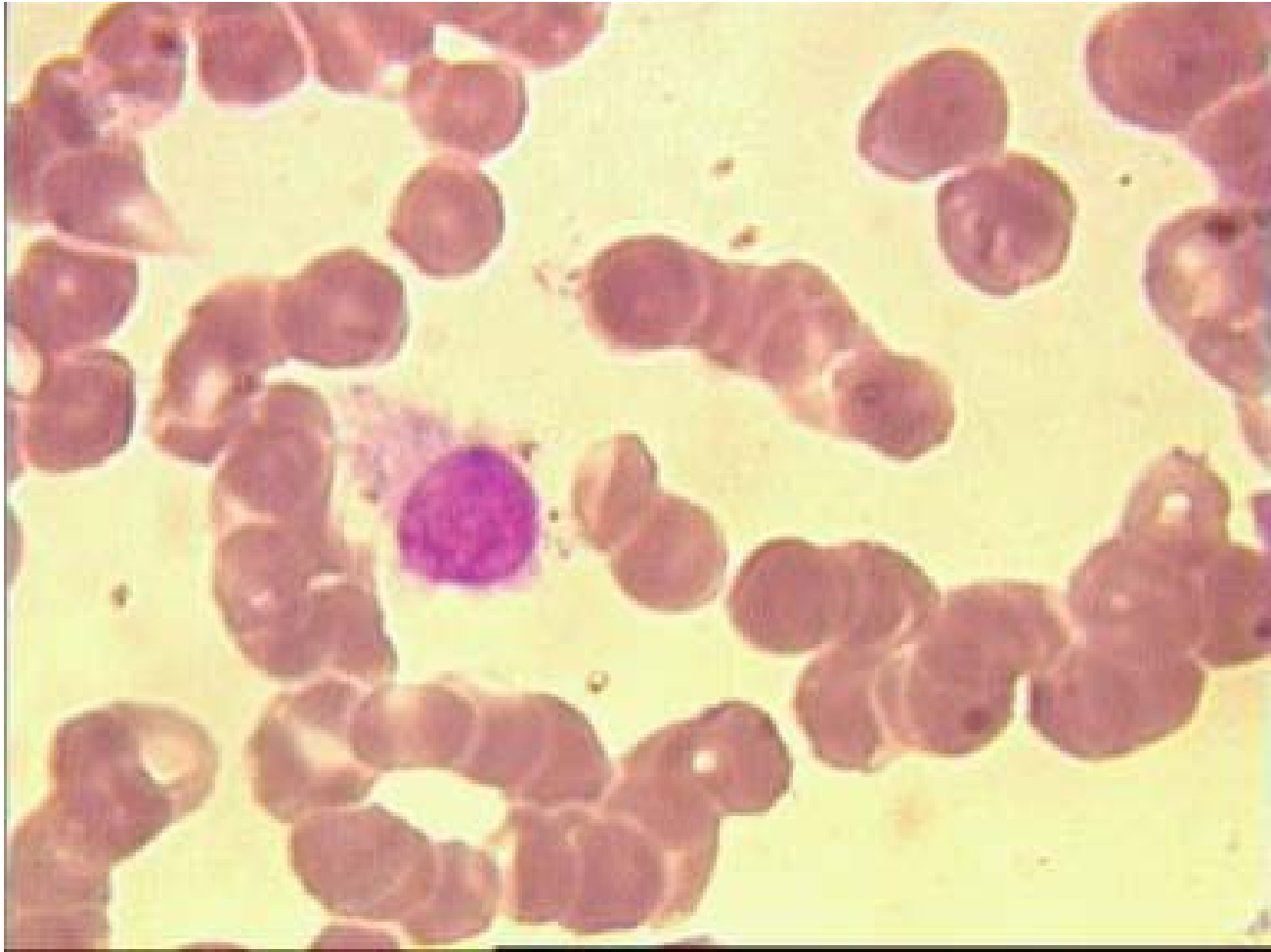


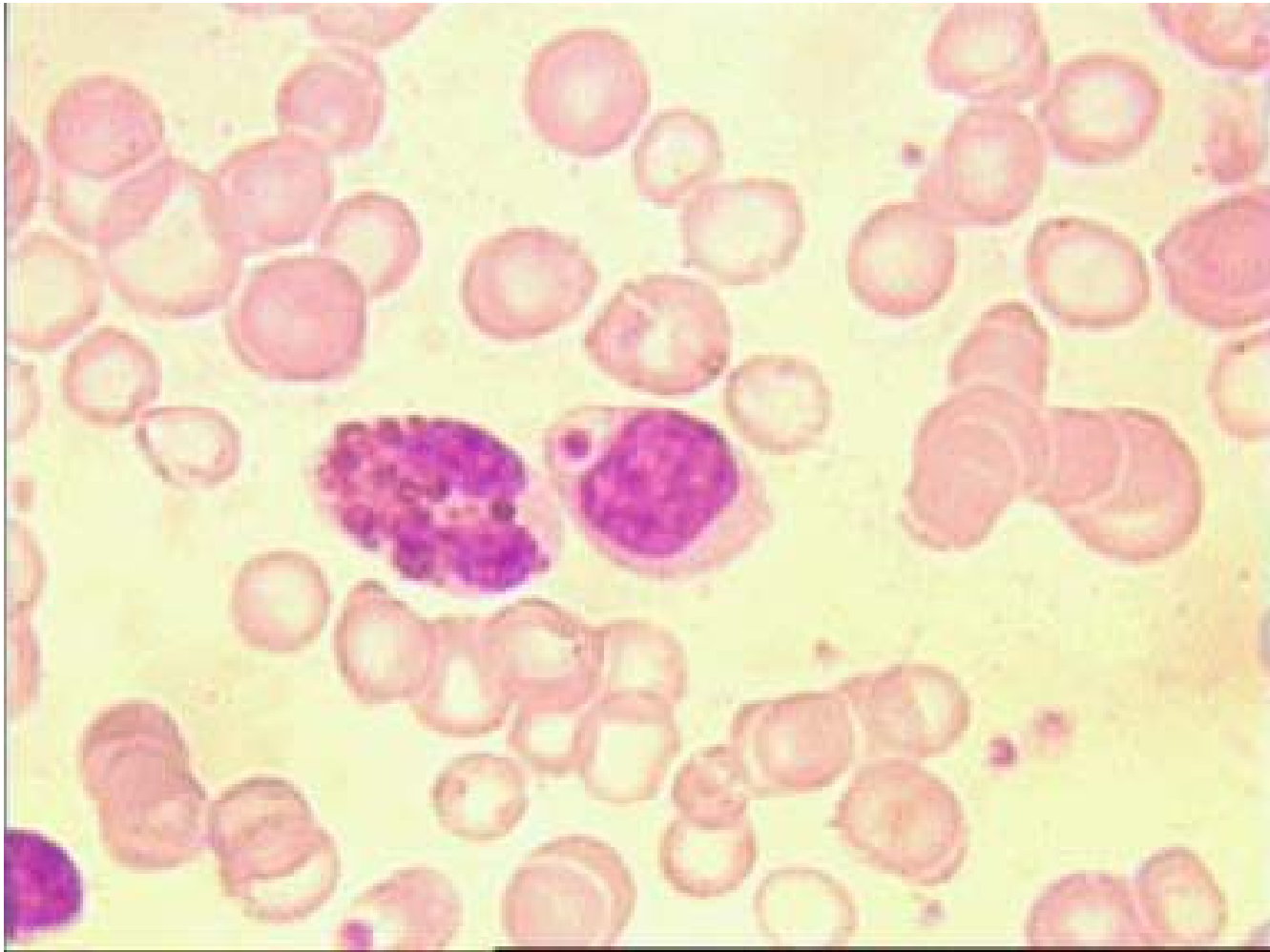












The background of the slide is a deep red, draped fabric with soft folds and shadows, creating a textured, elegant appearance. The text is centered in a white, bold, serif font.

# **Common Haematological Problems**

## A woman in her 5<sup>th</sup> pregnancy has:

- TLC:  $11.0 \times 10^9/L$
- Hb: 6.5 g/dl
- TRBC:  $3.1 \times 10^{12}/L$
- MCV: 62.1 fl
- MCH: 19.2 pg
- Platelets:  $470 \times 10^9/L$
- Reticulocytes: 3.5%
- ESR: 43 mm in 1st hour



## A young adult incidently found to have:

- TLC:  $7.0 \times 10^9/L$
- Hb: 10.5 g/dl
- TRBC:  $6.1 \times 10^{12}/L$
- MCV: 69.1 fl
- MCH: 18.2 pg
- Platelets:  $220 \times 10^9/L$
- Reticulocytes: 2.5%
- ESR: 15 mm in 1st hour

## Six months old boy with hepato-splenomegaly:

- TLC:  $37.0 \times 10^9/L$
- Hb: 3.5 g/dl
- TRBC:  $2.7 \times 10^{12}/L$
- MCV: 64.1 fl
- MCH: 21.2 pg
- Platelets:  $270 \times 10^9/L$
- Reticulocytes: 4.5%
- ESR: 37 mm in 1st hour

**A middle aged man with pallor and frequent loose motions has:**

- TLC:  $2.7 \times 10^9/L$
- Hb: 7.5 g/dl
- TRBC:  $3.1 \times 10^{12}/L$
- MCV: 120.1 fl
- MCH: 29.2 pg
- Platelets:  $32 \times 10^9/L$
- Reticulocytes: 2.5%
- ESR: 31 mm in 1st hour

**A young adult with sore throat and bleeding gums has:**

- TLC:  $1.7 \times 10^9/L$
- Hb: 4.5 g/dl
- TRBC:  $2.1 \times 10^{12}/L$
- MCV: 96.3 fl
- MCH: 28.2 pg
- Platelets:  $12 \times 10^9/L$
- Reticulocytes: 0.1%
- ESR: 95 mm in 1st hour

## A young man developed pallor and jaundice after taking an antipyretic:

- TLC:  $15.7 \times 10^9/L$
- Hb: 7.5 g/dl
- TRBC:  $2.9 \times 10^{12}/L$
- MCV: 100.1 fl
- MCH: 29.2 pg
- Platelets:  $232 \times 10^9/L$
- Reticulocytes: 25.0%
- ESR: 31 mm in 1st hour

## A five years old girl developed fever followed by purpuric rash:

- TLC:  $8.7 \times 10^9/L$
- Hb: 10.5 g/dl
- TRBC:  $4.1 \times 10^{12}/L$
- MCV: 73.1 fl
- MCH: 24.2 pg
- Platelets:  $10 \times 10^9/L$
- Reticulocytes: 3.5%
- ESR: 31 mm in 1st hour

## A middle aged man with fever, cough and chest pain has:

- TLC:  $28.7 \times 10^9/L$
- Hb: 14.5 g/dl
- TRBC:  $5.1 \times 10^{12}/L$
- MCV: 83.1 fl
- MCH: 30.2 pg
- Platelets:  $280 \times 10^9/L$
- Reticulocytes: 2.0%
- ESR: 51 mm in 1st hour

**A young man with fever, dyspnoea and epistaxis has:**

- TLC:  $57 \times 10^9/L$
- Hb: 5.7 g/dl
- TRBC:  $2.1 \times 10^{12}/L$
- MCV: 90.1 fl
- MCH: 27.2 pg
- Platelets:  $8 \times 10^9/L$
- Reticulocytes: 1.5%
- ESR: 52 mm in 1st hour



**A 55 years old male with easy fatigue-ability and hepato-splenomegaly has:**

- TLC: 238.7 X 10<sup>9</sup>/L
- Hb: 8.5 g/dl
- TRBC: 3.1 X 10<sup>12</sup>/L
- MCV: 77.1 fl
- MCH: 28.2 pg
- Platelets: 457 X 10<sup>9</sup>/L
- Reticulocytes: 1.5%
- ESR: 33 mm in 1st hour

**A 65 years old female with fever and generalized lymph-adenopathy has:**

- TLC: 180.2 X 10<sup>9</sup>/L
- Hb: 9.5 g/dl
- TRBC: 3.4 X 10<sup>12</sup>/L
- MCV: 79.1 fl
- MCH: 28.2 pg
- Platelets: 95 X 10<sup>9</sup>/L
- Reticulocytes: 6.5%
- ESR: 33 mm in 1st hour

