

**6th. clinical pathology Practical lecture**  
**Counting of the WBCs**

### Indication

- 1. Detection of increase in leukocytes (leukocytosis) that helps in confirming diagnosis of many inflammatory diseases or result of infection in animals e.g. traumatic pericarditis in cattle, pyometra in bitch, leukemia and also occur following certain parasitic infections or bone tumors and after strenuous exercise, or pregnancy, anesthesia, and epinephrine administration.**

There are five principal types of leukocytosis

- a- [Neutrophilia](#)** (increase of neutrophils is the most common form)
- b- [Lymphocytosis](#)** increase of lymphocyte
- c- [Monocytosis](#)** increase of monocyte
- d- [Eosinophilia](#)** increase of eosinophils
- e- [Basophilia](#)** increase of basophils

- 2- Detection of decrease in leukocyte count (leukopenia) which may accompany many diseases as viral infection (canine distemper, parvo virus infection), It can be associated with chemotherapy, radiation therapy, myelofibrosis and aplastic anemia (failure of white cell, red cell and platelet production) acute inflammation diseases in ruminants (early stages).**

### Procedure

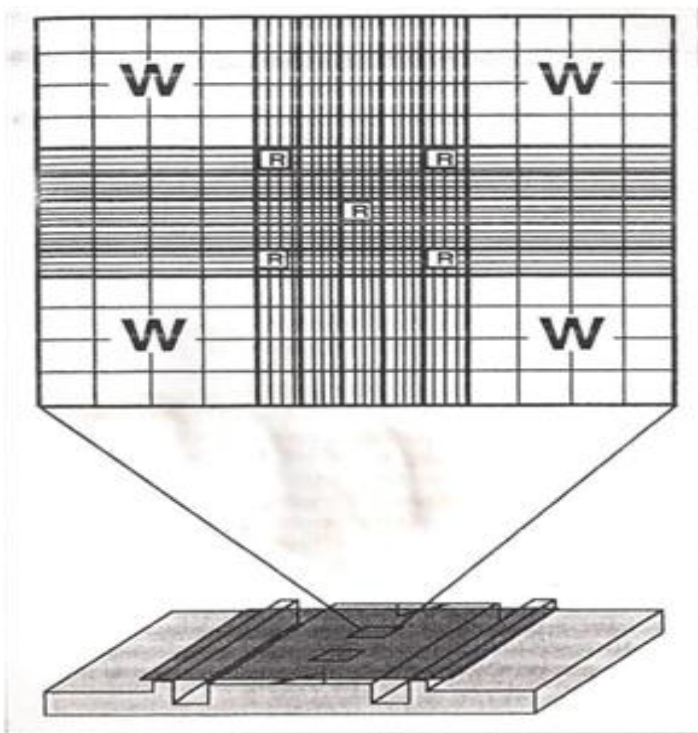
- Using the WBC diluting pipette draw blood to the mark 0.5.
- \*Draw diluting fluid (Turck,s or 0.1 N HCl) to the mark (11).
- \*Mix blood thoroughly by shaking with thumb and index finger over the two ends.
- \*Discard about one third of mixture.
- \*Charge the haemocytometer & let it stand for 2 minutes.
- Count WBCs in four large squares each containing (16) smaller squares (each one large square represent (1 mm<sup>2</sup>)).

$$= \frac{\text{No. of cells in 4 squares}}{4} \times 10 \times 20$$

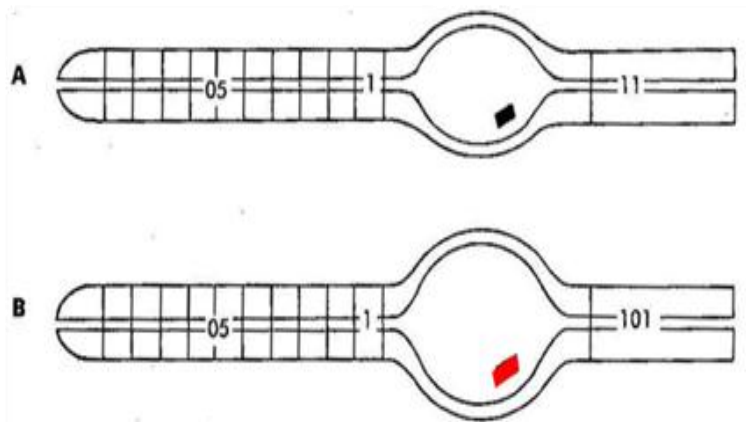
$$= \text{No. of cells/4 squares} \times 50 \text{ (fixed factor)}$$

**Table (1) Normal value of WBC and RBC count in animals**

Animal sp.	WBC×10 <sup>3</sup> / μl	RBCs×10 <sup>6</sup> / μl
Cow	4-12	5-10
Horse	5.4-14.3	6.5-12.5
Dog	6-17	5.5-8.5
Sheep	4-12	9-15
Goat	4-12	9-15



**Figure 6-2** Neubauer hemacytometer. The large Ws indicate the squares that are counted for a total white blood cell (WBC) count with the 1:20 dilution WBC Unopette system. The small R indicate the squares that are counted for a red blood cell (RBC) count with the RBC Unopette system.



**Fig. 3-1.** Blood dilution pipettes. A, Capable of dilutions of 1:10 and 1:20, commonly used for leukocyte dilutions; B, capable of dilutions of 1:100 and 1:200, commonly used for erythrocyte dilutions.