

DETECTION OF MASTITIS BY WHITE BLOOD CELL COUNT

BY

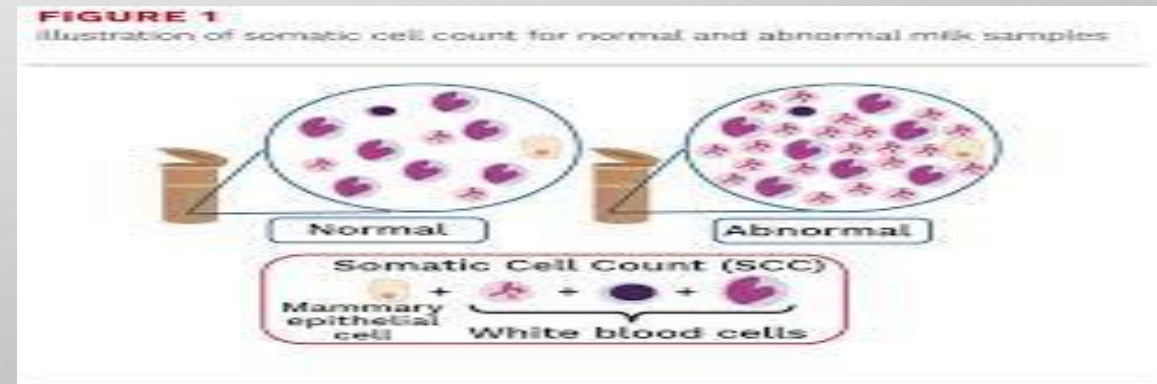
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MASTITIS
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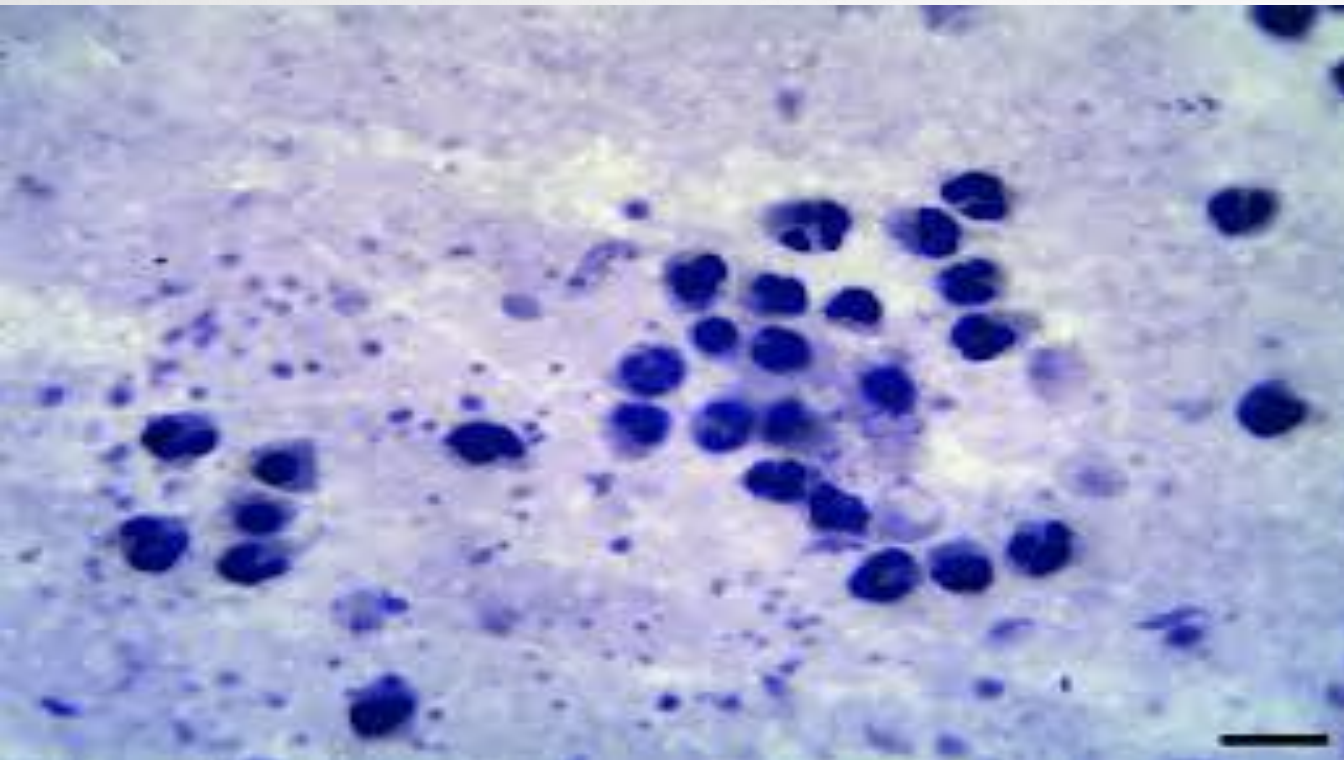


Mastitis is characterized by physical, chemical and bacteriological changes in the milk and pathological changes in the glandular tissue of the udder and affects the quality and quantity of milk. The bacterial contamination of milk from the affected cows render it unfit for human consumption and provides a mechanism of spread of diseases. .

Somatic cell count (SCC) is a useful predictor of intramammary infection (IMI) that includes leucocytes (75%). neutrophils, macrophages, lymphocytes, and epithelial cells (25%). Leucocytes increase in response to bacterial infection, tissue injury and stress. Somatic cells are protective for the animal body and fight infectious organisms. An elevated SCC in milk has a negative influence on the quality of raw milk.



An **increased** number of **somatic cells**, a change in the electrical conductivity of milk and a **decreased concentration of lactose** are the main indicators of milk for the diagnosis of subclinical mastitis. Monitoring changes in milk composition and quantity can help identify cows with mastitis effectively and quickly. The content of the main components in milk decreases by 5–15 percent, the composition of fat and protein changes



Parameter	Change
<i>Lactose</i>	Decreased
<i>Milk fat</i>	Increased free fatty acids
<i>Casein</i>	Decreased
<i>Serum proteins</i>	Increased, particularly serum albumin and immunoglobulins
<i>Chloride</i>	Increased
<i>Sodium</i>	Increased
<i>Calcium</i>	Decreased
<i>pH</i>	Increased

Factors Affecting on Scc in the Milk

FACTORS INCREASING MILK SCC

- Udder infection/Injury
- An increase in parity
- Increase in stage of lactation
- Un Hygienic/ incomplete milking
- Un Hygienic cow surroundings
- Hot-humid climates
- Change in housing/Feed
- Keeping sick cows with healthy cows
- Any other stress

FACTORS DECREASING MILK SCC

- Healthy udder/Animal/Milker
- Hygienic milking practices
- Clean animal surroundings
- Regular udder screening
- Feeding antioxidants
- Treating infected cows/ Culling chronic mastitis cows
- Post-milking teat dippings
- Awareness about mastitis/ proper dry cow therapy
- Selection against mastitis

Procedure of determination SCC / ml of milk

- 1-Take a clean slide and divide it in to two Squares of 1cm 2 areas .
.with the help of diamond pencil.
- 2-Put 10 μ l (0.01ml) of milk on each area and allow for air dry
- 3- Then put the slide in Xylene for 2-3 minutes for defatting .
- 4-After defatting allow the slide for air drying again and then fixation of smear by 95% ethanol for 5 minutes. After fixation again allow slide for air drying and then stain by 10 % Giemsa solution for 30 minutes



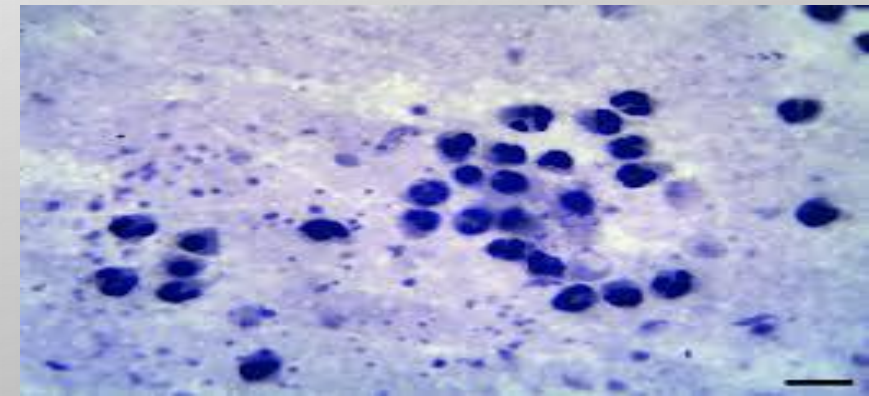
5-Now wash with tap water.

6- Observe 10 fields on a square and count number of cells in each field . Then add all the number of cells obtained from 10 fields and divide by 10 to .get average number of cell in each field

7- Than multiply the average number of cells with 5000 as 1cm² area has fields. This is number of cells in 0.01ml of milk, to convert it into 5000 ml ,multiply the number of cell in 0.01 ml with 100, it will give number of cells per ml of milk This can directly be obtained by multiplying the average number of cells with 500000

8-number of cells per ml of milk is considered 200,000 normal and more than this is considered positive.

More than 500, 0000 cells per ml of milk is taken as +++ mastitis



Ex. Total leukocyte in 10 field = 18

average no = $18/10 = 1.8$

NO $\times 5000$, $1.8 \times 5000 = 9000$ cells / square tat is Number of cells per 0.01 ml

For ml ,

the No of cells per 0.01 ml $\times 100$ cells/ml

$100 \times 9000 = 900000$

Results interpretations for Somatic Cell Count / ml of milk

