Name:_____

Animal Health
Bacterial Diseases
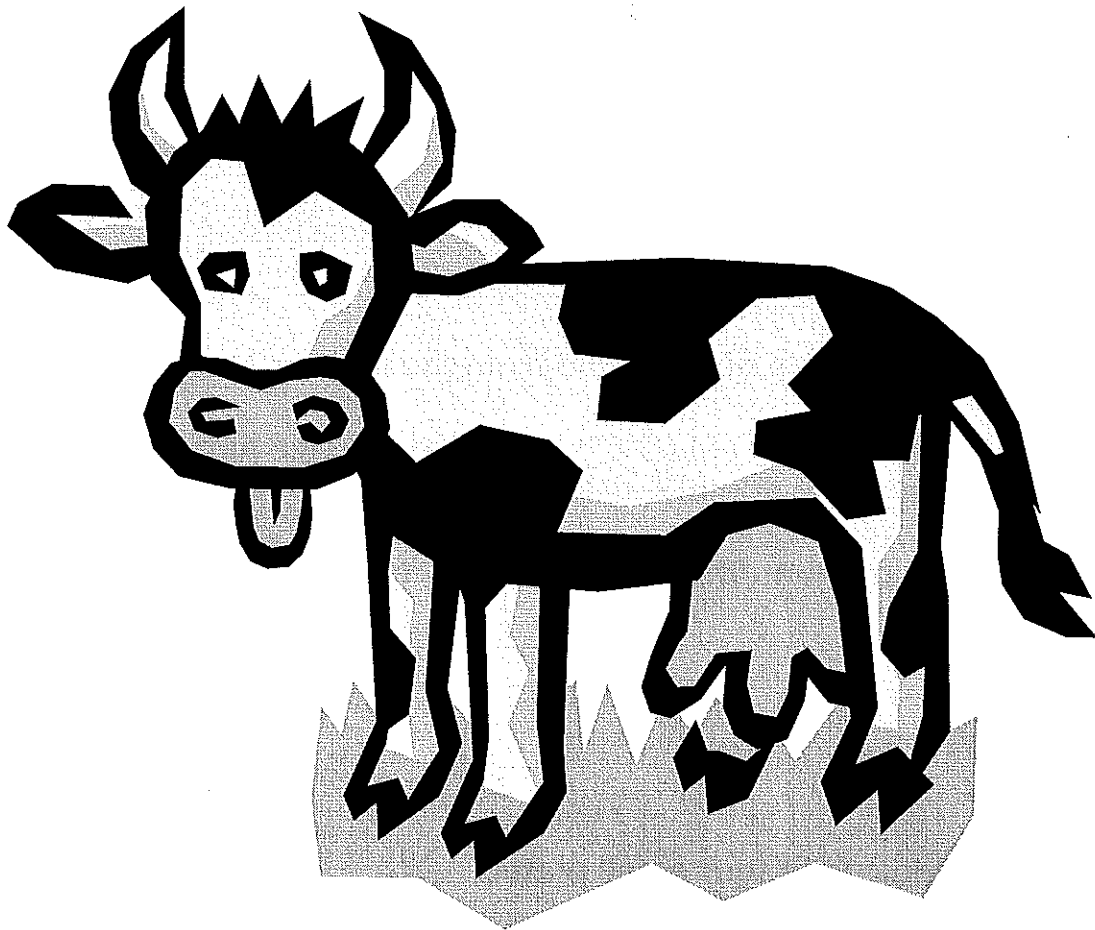
Mastitis Testing
Laboratory Exercise
40 Points

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Background Information:

Milk normally contains a number of living cells called somatic cells. These cells can originate from the blood or from the udder gland itself.

In a normal healthy udder, the cell count is under 250,000/ml. When the udder is damaged or irritated, (examples included: wrong milking technique, faulty milk machine or presence of infection) the cell number will increase rapidly.

This makes somatic cell count a reliable indication of udder health. Therefore milk with a high cell count indicates the cow has mastitis and you will have:
- Poor quality milk
- Lower production
- Expense of treatment

Cows with mastitis are often culled from the milking herd.

The California Mastitis Test (CMT) is an inexpensive and proven method of measuring somatic cell counts.

The more cells present, the more the CMT fluid will show a positive reaction.

Materials:
CMT
- Test paddle with four small plates
- Bottle with test reagent
- Milk Samples
- Pipette

Dr. Naylor Indicator Slips
- Testing Slips
- Milk Samples
- Pipette

California Mastitis Test

Procedure:

1. Obtain one of the 4 milk samples.
2. Using a pipette, add NO MORE than 2ml of milk to one section of the paddle.
3. Add <u>1 Pump</u> of the purple testing agent into the paddle. WARNING: The testing agent WILL STAIN your clothes and skin!
4. Rotate the test plate thus mixing the test liquid and the milk.
5. Evaluate the somatic cell content in the milk using the provided reaction pictures.
6. Rinse the test plate with water and dry.
7. Repeat steps for EACH sample.

Laboratory Observations & Results:

1. Record visible observations of the milk prior to testing.

   a. Sample A:

   b. Sample B:

   c. Sample C:

   d. Sample D:

2. Provide a hypothesis of the results by listing in order the sample with the lowest to the highest somatic cell counts.

3. What observations led to your hypothesis?

⇒ *Conduct the procedural steps for the CMT test and answer the following questions.*

4. Record visual observations of the milk after adding the testing agent.

    a. Sample A:

    b. Sample B:

    c. Sample C:

    d. Sample D:

5. Using the provided reaction pictures, categorize each of the samples as Negative, Weak Positive, Positive, High Positive.

    a. Sample A:

    b. Sample B:

    c. Sample C:

    d. Sample D:

Evaluation of CMT Results Table			
Negative	Weak Positive	Positive	High Positive
< 250,000 cells/ml	400,000 to 1,500,000 cells/ml	800,000 to 5,000,000 cells/ml	> 5,000,000 cells/ml

6. Using the table above, record the somatic cell levels of each sample.

    a. Sample A:

    b. Sample B:

    c. Sample C:

    d. Sample D:

Dr. Naylor Mastitis Indicators

Procedure:
1. Obtain an indicator slip.
2. Pipette 3 drops of the sample onto one quarter of the indicator slip (orange circle).
3. Evaluate the results. A yellow color with a faint greenish tinge indicates normal milk. A green color indicates the presence of mastitis. Shades of colors between the two indicate varying degrees of mastitis.

1. Record visible observations of the milk prior to testing.

    a. Sample A:

    b. Sample B:

    c. Sample C:

    d. Sample D:

⇒ *Conduct the procedural steps for the Dr. Naylor test and answer the following questions.*

2. Record visual observations of the testing slip after adding the milk.

    a. Sample A:

    b. Sample B:

    c. Sample C:

    d. Sample D:

3. Which samples show mastitis as being present?

    a. Sample A:

    b. Sample B:

    c. Sample C:

    d. Sample D:

Summary Questions:

1. What are the cells naturally found in milk called?

2. To what level is the cell count still considered normal?

3. Which samples contain mastitis?

4. Which samples should be treated?

5. Are the results (mastitis presence) of each test the same? What could have caused variations in the results?

6. Which test provides a more accurate result and why?

7. If you were a dairy farmer, which test would you choose to use for your operation?