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Dairy Guidelines

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LEUCOCYTE SCREENING TESTS AND DAIRY HERD IMPROVEMENT

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Mastitis varies in its effect on the mammary gland from mild irritation to almost complete destruction of the secretory tissue. Dairy men can usually detect clinical mastitis by the appearance of the milk or udder swelling and are aware of losses caused by acute stages of this disease. Early infections and subclinical cases are more difficult to detect and the unrealized losses in production are harder to recognize.

Leucocytes (white blood cells) are normally present in the vascular system and body tissues of the cow. They are part of the defense mechanism of the body and become concentrated at the site of inflammation wherever it may be located. There is, therefore, an increase in the number of leucocytes in the udder when it is the site of inflammation. This increase in leucocyte numbers is the basis for the screening tests that indirectly indicate the presence of mastitis.

What Are Leucocytes?

Leucocytes are white blood cells and are normally found in the blood and milk of healthy cows. They are formed mainly in the bone marrow and lymph nodes, transported by the blood and lymph, and perform their function in all body tissues. Leucocytes are necessary for the life and well-being of an animal by helping to destroy bacteria and their toxic products in the affected tissue. Leucocytes in abnormally large numbers lower the keeping quality of milk.

Causes Of Increased Leucocyte Counts In Milk

- I. Irritation or Inflammation of the Udder.
 - a. Improper use of milking machines.
 1. Improper or absence of udder stimulation prior to attaching the machine.
 2. Machine left on after cessation of milk flow.
 3. Rough handling.
 - b. Malfunction of milking machines.
 - c. Injury to teats or udder.
 - d. Use of irritating treatments.
 - e. Stress from many causes.
 - f. Infection.
- II. Milk saved too soon after calving.
- III. Low production in late lactation (after 325 days).
- IV. Poor nutrition or abrupt ration changes.

Leucocyte Screening Tests

The most accurate method for counting leucocytes is the direct microscopic count (DMC). An exact quantity of milk is spread on a glass slide, dried, stained, and observed under the microscope. This process is highly time consuming and cannot be conducted in the barn or parlor. Several screening tests have been developed for rapid estimation of leucocyte numbers. The advantages and disadvantages of these tests are included in a publication of the U. S. Department of Health, Education and Welfare entitled "Screening Tests for the Detection of Abnormal Milk." This Public Health Service Publication No. 1306 can be obtained for 20¢ from the Superintendent of Documents, U. S. Government Printing Office, Washington, D. C. 20402. An outline of procedures for the Modified Whiteside and California Mastitis Tests, the two most widely used screening tests in Virginia, are included in this publication.

Including Abnormal Milk Screening Tests In DHIA

The sample of milk collected by DHIA Supervisors for determining the butterfat content can also be used for leucocyte screening tests. This is a composite sample of the milk from all four quarters of the individual cow's udder and abnormal milk screening test results will indicate the presence or absence of high leucocyte numbers. Samples must be fresh. Preservatives added to milk samples will alter leucocyte screening test results.

Screening tests that identify a cow that is producing abnormal milk do not diagnose the cause or kind of infection or injury present. Systematic recording of monthly screening test results for individual cows will provide useful management information for the dairyman. Local DHIA groups through their officers and directors provide the simple, inexpensive equipment and supplies for making the screening test available to their membership.

What To Do With Positive Cows

Many dairymen have cows that are producing milk that contains high leucocyte counts. The first thing that must be done is to determine the cause of these high counts. If a large percentage of the cows are positive, herd management should be suspected. Is the equipment operating properly? Do the milking procedures used conform to the approved practices for managed milking? Are the barns and loafing areas free of junk and hazardous objects?

If only a few cows are positive, take a close look at these cows as individuals. Did she recently freshen? Is she ready to be dried off? Is she sick? Did she slip and fall?

High counts can most often be traced back to poor management practices. The first step to take is to eliminate these causes. The next step is to seek the help of a veterinarian for treatment of the infected cows. He will examine the cows clinically, and apply further laboratory testing procedures as required to determine the cause and select the most effective treatment.

Additional procedures such as the isolation of infected cows from the rest of the herd, selling some of the most severely affected animals, discarding milk during the treatment period, as well as other measures, may be necessary depending upon the existing situation.

Never treat your own cows. Indiscriminate use of antibiotics is dangerous and costly. Improper procedures can cause more mastitis than was present in the beginning. The organism causing the disturbance must be eliminated and antibiotic sensitivity tests need to be conducted to insure the correct treatment.