

ELECTRONIC SOMATIC CELL COUNT

Bentley Somacount™ 150/300/500/FCM/FC (Raw Commingled Cow, Goat, Sheep, Water Buffalo and Camel Milk) IMS #16c

(Unless otherwise stated all tolerances ±5%)

- 1. **Laboratory Requirements (see Cultural Procedures (CP) items 33 & 34)** _____
 - a. Un-preserved samples may be run up to 72 hours after initial collection _____
 - b. Samples may be tested up to 7 days after initial collection if preserved with 0.02% 2-bromo-2-nitropropane-1,3-diol (Bronopol™) or 0.05% potassium dichromate (K₂Cr₂O₇) _____

- 2. **Comparative Test with DMSCC**
[NOT required as a co-requisite for certification of analysts in laboratories purchasing standards from a CERTIFIED provider (item 12.b)] _____
 - a. Analyst(s) certified for DMSCC _____
 - b. Each analyst seeking certification for the ESCC test shall perform the comparative test _____
 - 1. Test 4 samples (100K-200K, 300K-500K, 600K-800K and 900K-1.2M) in triplicate for both DMSCC (three separate smears each) and ESCC _____
 - 2. Results must be evaluated by the FDA/LPET LEO or LEO and shown to be acceptable prior to official use of test in laboratory _____
 - 3. Copy of comparison and results in QC record (or easily accessible on file in the laboratory); kept for as long as analyst is certified _____
 - c. Required for laboratories preparing in house standards or using commercially prepared standards (items 12.a and c) _____

APPARATUS

- 3. **See CP Items 1-4** _____

- 4. **Electronic Somatic Cell Counter** _____
 - a. Bentley Somacount 150 _____
 - b. Bentley Somacount 300 _____
 - c. Bentley Somacount 500 _____
Dual Channel Machine (DCM) _____

- d. Bentley Somacount FCM _____
Dual Channel Machine (DCM) _____
- e. Bentley Somacount FC _____

5. Water Bath _____

- a. Circulating and thermostatically controlled to 37-42°C _____

REAGENTS

6. Stock Dye/Buffer Solution _____

- a. Dissolve 80 g of tripotassium citrate monohydrate, (K₃C₆H₅O₇·H₂O), 3.0 g of citric acid monohydrate (C₆H₈O₇·H₂O), and 0.25 g (1 tablet or equivalent) of ethidium bromide (C₂₁H₂₀BrN₃) in 750 mL of deionized (DI) or MS water. Heat to 40-60°C and stir until totally dissolved _____
- b. Add 10 mL of neutral detergent, Triton X-100, and stir until totally dissolved. Adjust volume to 1 Liter with DI or MS water _____
- c. Store refrigerated (0-4.5°C) in airtight, light-proof container for no longer than 90 days _____

Lab Prep Date: _____ Lab Exp. Date: _____

WORKING SOLUTIONS

7. Dye/Buffer Solution _____

- a. Dilute 1 part of Stock Dye/Buffer solution with 9 parts of DI or MS water _____
- b. Protect from light and use within 21 days _____

Lab Prep Date: _____ Lab Exp. Date: _____

8. Rinse Solution _____

- a. Add 20 mL of alkaline detergent, RBS, per liter of DI or MS water and mix _____
- b. Use within 7 days _____

Lab Prep Date: _____ Lab Exp. Date: _____

9. Optionally, Use Manufacturer's Reagent Kits and Instructions _____

10. All Solutions Labeled with Date Prepared and Expiration Date _____

START UP

11. Cell Counter

- a. Check that the volume of dye/buffer solution (item 7) and rinse solution (item 8) in the supply containers is of sufficient volume for the number of samples to be tested
- b. Solutions not to be used beyond expiration date(s)
- c. Turn on computer and instrument, wait 20 minutes before proceeding
- d. For Somacount FC
 - 1. Laser power > 2.0 mW
 - 2. PMT voltage > 0.005 Volts
- e. For all other models (Somacount 150/300/500/FCM)
 - 1. Laser power > 0.25 mW
 - 2. |PMT voltage| > 10 mV
- f. Dye/Coil temperature between 67-73°C
- g. Test DI or MS water at least 3 times on each channel in use; (i.e. 6 times for dual channel instruments) reading must be zero (0) on every test
- h. **IF ANY ABOVE PARAMETERS ARE OUT OF TOLERANCE, CORRECT BEFORE PROCEEDING**
- i. Maintain records on all parameters each time instrument is used

12. Milk Standards

- a. Commercially prepared: _____
 - Lot#: _____ Date Rcd.: _____
 - 1. Four standards in ranges 100K-200K, 300K-500K, 600K-800K and 900K-1.2M
 - 2. Perform DMSCC in triplicate on each standard in set and average counts; maintain records
 - 3. Perform DMSCC check in rotation by all certified analysts
 - 4. Standards used within one week

Lab Exp. Date: _____

b. Certified provider: _____

Lot#: _____ Exp. Date: _____ Date Rcd.: _____

1. Four standards in ranges 100K-200K, 300K-500K, 600K-800K and 900K-1.2M _____
2. Maintain copies of all provided DMSCC values _____
3. Measure and maintain records of temperature (0.0-7.5°C) of standards as received _____
4. Maintain copies of all correspondence regarding problems _____
5. Standards used by manufacturer's expiration date _____
6. Failed standards shall be verified with DMSCC _____
 - a. If no analysts certified for DMSCC then a new set of standards is required _____
 - b. Do not continue with official testing until the new standard(s) test(s) in range _____

c. Laboratory prepared (weekly) _____

1. Prepare from raw milk >18 hours old preserved with 0.05% potassium dichromate ($K_2Cr_2O_7$) _____
2. Or, preserved with 0.02% 2-bromo-2-nitropropane-1,3-diol (Bronopol™) _____
3. Standards **cannot** be preserved with formalin _____
4. Prepare 4 standards in ranges 100K-200K, 300K-500K, 600K-800K and 900K-1.2M, use within one week _____

Lab Prep Date: _____ Lab Exp. Date: _____

5. Perform DMSCC in triplicate on each standard prepared and average counts; maintain records _____
6. Perform DMSCC check in rotation by all certified analysts _____

d. Hourly Control Sample (instrument drift check) _____

1. Use one of the standards (items 12.a, b or c) in the 600-800K range; test in triplicate and determine average _____
2. Optionally, prepare sufficient control/sample 600-800K range, test in triplicate and determine average _____

PROCEDURE

13. Testing Standards (each time instrument used)

- a. Heat standards to 37-42°C (using a temperature control) and test within 30 min of reaching temperature, use once and discard; i.e., do not re-use
- b. Mix by inverting at least 2x, test standards within 3 min
- c. Test the standards in triplicate and average the counts for each level; maintain records
- d. Each standard's average must be within 10% of the DMSCC (item 12) for that level, except within 15% for 100-200K standard; maintain records
- e. Repeatability - a standard in the 300K to 800K range must have a coefficient of variation (CV) of 5% or less on 10 replicates (**Refer to Operating Manual**); maintain records
- f. For dual channel machines, the standards must be run in triplicate on each channel and coefficient of variation (CV) must be determined for each channel that is in use
- g. **THESE PARAMETERS MUST BE ACHIEVED BEFORE PROCEEDING**
- h. Dual Channel Machines (DCM) can be run on single channel
 - 1. Switch off channel that does not meet above parameters per operating instructions
 - 2. Run machine on single channel

14. Testing Samples

- a. Heat samples to 37-42°C (using a temperature control) and read within 30 min of reaching temperature
- b. Test samples within 10 min after removal from water bath
- c. Mix by inverting at least 2x, test samples within 3 min
- d. Record number of cells counted for each sample

15. With Continuous Operation:

- a. Run zero control (item 11.g) hourly
- b. Test a standard or optionally a control/sample (item 11.d) in the 600K to 800K range hourly in triplicate and determine the average, must be within 5% of the original established instrument average value (optionally, within 10% of original DMSCC average)

- c. For dual channel machines, the hourly control in triplicate and the zero control must be tested and found acceptable for each channel that is in use _____
- d. Maintain records _____

16. Routine Maintenance _____

- a. Maintain records _____

REPORTING

17. Computing and Reporting of Counts _____

- a. Count obtained x 1000 is the cell count/mL milk _____
- b. In reporting electronic somatic cell counts (ESCC/mL), record only first two left hand digits, raising second digit to next higher number when third digit is 6 or more _____
- c. Report the two left hand digits (rounded) _____
 - 1. If the third digit is 5, the second digit is rounded by the following rule _____
 - a. When second digit is odd round up, raising the second digit by 1 (odd up, 235 to 240) _____
 - b. When second digit is even round down, delete the 5 and report the second digit as is (even down, 225 to 220) _____
- d. If count on instrument is < 100, report count as < 100,000 ESCC/mL _____
- e. If goat or camel milk is over the regulatory limit, follow confirmation procedure in PMO _____