

Raw Milk Diagnostic Test

Raw Milk Source	SPC (CFU/ml)	Coliform (CFU/ml)
Guidestone*	102	6
High Quality Dairies	5000	10
Quality Dairies	10000	<50

*Data reflects average values from diagnostic tests performed by the Colorado Veterinary Diagnostic Laboratories; College of Veterinary Medicine and Biomedical Sciences, Colorado State University, Fort Collins.

Summary of Raw Milk Diagnostic Test

Properly prepared milk samples are tested on a regular basis for bacterial content to evaluate the health of individual cows and the health of the herd. In general, raw milk samples are cultured on different nutrient agar mediums to identify various species of bacteria which can be found in raw milk. Any visible growth of bacteria is referred to as colony forming units (numbers of individual or tightly associated clumps of bacteria, CFU). Regardless of bacterial type, the total number of CFU is reported as the standard plate count, SPC. Some diagnostic laboratories report the total SPC, that is, they do not list the individual bacterial species found, while other labs report the actual type of bacteria found, and it is understood in this form of reporting that the sum total of CFU for all listed bacterial species is the SPC for the raw milk sample under question. If Coliforms are identified in the initial SPC, those are reported separately. Coliforms are a broad class of bacteria found in the environment, including the feces of man and other warm blooded animals. These bacteria are generally not pathogenic themselves, but can serve as indicators of the presence of organisms which may be pathogenic. (1), (2), (3), (4)

Properly Prepared Milk Samples

Properly prepared raw milk samples necessitate the raw milk is cooled to 7 C, or less, within 2 hours of milking. The sample is then maintained at this temperature and care is taken not to contaminate the raw milk from outside sources (for example, a human hand). (5)

General Procedure for Testing Milk Samples

1 ml of a properly prepared raw milk sample is incubated at an elevated temperature, 90 F, for an extended amount of time, 48 hours, and is then

cultured on different media, to determine the total CFU, as well as screening for Coliforms. (2), (6)

Interpreting results from a milk diagnostic test

After a raw milk sample is cultured, the SPC of the sample is determined. **High quality** dairies have an SPC of 5000 CFU/ml or less. Raw milk samples with an SPC of 10,000 CFU/ml or less are considered acceptable and to be from a **quality** dairy. Results higher than 10,000 CFU/ml indicate unclean or unsanitized milking equipment and/or mastitis.

Coliforms counts (CC) of 10 CFU/ml are considered excellent and are associated with **high quality** dairies. CC less than 50 CFU/ml are acceptable and indicate poor udder preparation before milking and are associated with **quality** dairies. CC greater than 50 CFU/ml is cause for concern and can be indicative of mastitis. (7), (8)

Guidestone's Milk

Milk produced by the Guidestone Farm has, on average, an SPC of 102 CFU/ml of raw milk sample. Guidestone's raw milk quality is a factor of 49 times cleaner than the **high quality** limit for raw milk of 5000 CFU/ml, and 98 times cleaner than the **quality** limit, both values are recommended by the industry's Milk Quality Leadership Council. (2)

The average CC for Guidestone's raw milk is 6 CFU/ml, which is 1.7 times cleaner than the industry **high quality** limit, and 8.3 times cleaner than the **quality** limit.

References

- (1) Colorado Veterinary Diagnostic Laboratories; College of Veterinary Medicine and Biomedical Sciences, Colorado State University, Fort Collins, CO 80523; 970.297.1281.
- (2) Virginia Cooperative Extension, 1999, publication 404-405; Virginia Polytechnic Institute and State University;
www.ext.vt.edu/pubs/dairy/404-405/404-405.pdf

- (3) Benton Franklin County Health District, Washington State;
www.bfhd.wa.gov/info/coliform.php
- (4) Southern Nevada Water Authority: Coliforms;
www.snwa.com/html/wq_water_facts_coliforms.html
- (5) National Dairy Council; Various Pasteurized Milk Ordinance (PMO) Requirements for Grade A Compliance; www.nationaldairy.org/nutrition/products/table24.pdf
- (6) Dr. Pamela L. Ruegg, DVM, MPVM, Assoc. Professor, Department of Dairy Sciences, University of Wisconsin, Madison.
- (7) Department of Veterinary Science at Penn State University,
www.vetsci.psu.edu/jayarao/btm.htm
- (8) Dairy Biz – Udder Health, Milk Quality Issues;
www.moomilk.com/archive/u_health_40.htm

Compiled by Colette Slade, Chemist

Subj: 034-53469
Date: 3/25/2004 4:57:44 PM Mountain Standard Time
From: jhovland@chimera.vth.colostate.edu
To: jhovland@lamar.colostate.edu, mja61701@aol.com

COLORADO VETERINARY DIAGNOSTIC LABORATORIES
College of Veterinary Medicine and Biomedical Sciences
Colorado State University Fort Collins CO 80523-1644
970-297-1281 FAX 970-297-0320

LABORATORY RESULTS

OWNER: David Lynch DL Accession: 034-53469
VET: NONE LISTED Sample Received: 03/24/2004
SPECIES: BOV Diagnostician: jh
BREED:

Results Comment Code

TEST: Milk Culture
MILK BULK TANK Multiple isolates:
MILK BULK TANK -Environmental Strep, 70 cfu/ml
MILK BULK TANK -Coag-negative Staph, 150 cfu/ml
MILK SOPHIE No growth
MILK UTTARA Environmental Strep 4000cfu/ml

COMMENT CODE COMMENT NARRATIVE

SPECIAL NOTES

1 EMAILED PRELIMINARY RESULTS: mja61701@aol.com 03/25/2004 by
jhovland

Main Identity

From: "Colette Slade" <coletteslade@comcast.net>
 To: "Jim Dean" <jim@deanandstern.com>
 Sent: Wednesday, April 14, 2004 5:07 PM
 Subject: Milk result - one test and looking for the rest.....

----- Original Message -----

From: scottandterri@frii.com
 To: coletteslade@comcast.net
 Sent: Friday, April 09, 2004 9:34 AM
 Subject: [Fwd: 034-55820]

----- Original Message -----

Subject: 034-55820
 From: jhovland@chimera.vth.colostate.edu
 Date: Thu, April 8, 2004 1:20 pm
 To: jhovland@lamar.colostate.edu
 scottandterri@frii.com

COLORADO VETERINARY DIAGNOSTIC LABORATORIES
 College of Veterinary Medicine and Biomedical Sciences
 Colorado State University Fort Collins CO,80523-1644
 970-297-1281 FAX 970-297-0320

L A B O R A T O R Y R E S U L T S

OWNER: David Lynch DL Accession:
 034-55820 VET: NONE LISTED Sample
 Received: 04/02/2004 SPECIES: BOV
 Diagnostician: jh BREED:

Results Comment Code

TEST: Milk Culture
 MILK BULK TANK 04/01/04 Coag-negative Staph 50cfu/ml

COMMENT CODE COMMENT NARRATIVE

SPECIAL NOTES

- 1 EMAILED PRELIMINARY RESULTS: scottandterri@frii.com
04/06/2004 by jhovland
- 2 EMAILED FINAL RESULTS: scottandterri@frii.com 04/08/2004 by
jhovland