



DID YOU KNOW?

- ▶ Tanker milk samples are collected and analyzed on-site at the receiving plant, BEFORE the milk is unloaded
- ▶ Individual milk samples collected by a licensed bulk hauler at the farm are often subjected to further testing at a certified off-site laboratory
- ▶ Laboratories and laboratory analysts are certified by the Minnesota Department of Agriculture (MDA)



DETECTING DRUG RESIDUES IN MILK

Laboratories test milk from bulk tankers and individual producers on a per load and individual basis to detect residues. There are several different tests available and approved for use for this purpose. Understanding which test or tests your plant uses and how you can test milk from your own farm can be an important and effective piece of your drug residue prevention tool kit.

What antibiotics do we test for?

On a routine basis, all tankers and monthly farm samples are tested for beta lactam antibiotics. A processor may test for any kind of residue at any time; the regulatory agency may also direct testing for other drugs when it identifies a potential problem or need for testing. Table 1 shows a list of the common tests used to test different kinds of samples in Minnesota.

Are there differences in the tests?

All tests for official regulatory testing must meet specific criteria for which drugs they detect. The criteria are set by the FDA to meet food safety requirements that ensure drug residues are maintained at a safe level. While all the tests are relatively similar, they do have some small differences in level of detection and drug profiles.

Despite these small variations between tests, a positive on any FDA approved test will constitute a residue violation. Tables 1 and 2 detail the common tests used in Minnesota and their detection levels for different drugs.

What happens if there is a positive?

For routine tanker samples, a positive screening sample will be retested in duplicate to verify the result. If the sample is verified as positive, the entire tanker must be disposed of. Individual producer samples from the positive load will then be tested to determine which producer is responsible for the residue. Once the individual producer is identified, the MDA is notified, and the producer will receive notification of a violation. The producer identified as the source of the positive sample cannot sell milk until their current bulk tank of milk is 'cleared' by testing negative (or "Not Found") with the same test method used to confirm the original violative sample. The responsible producer will also be required to pay for the cost of the milk in the tanker. Monthly quality producer samples are tested after the tanker has screened negative, residues resulting from this testing will receive a violation and proceed in much the same way, except the original tanker is not disposed of.

Table 1. Common Residue Tests in Minnesota

| Type of Sample | Common Tests Used in Minnesota |
|--|---|
| Routine tanker samples and follow up samples for positives | Charm® SL or SL3 (Beta Lactam) IDEXX New SNAP Beta Lactam Test Kit (Beta Lactam) Delvotest P Mini (Beta Lactam) |
| Monthly quality individual producer samples | Delvotest P5 Pack (initial screening) Charm® SL or SL3 (confirmation testing) |

Table 2. Milk Drug Residue Screening Test Detection Levels for the Beta Lactam Group

| Drug | Amoxicillin | Ampicillin | Ceftiofur | Cephapirin | Cloxacillin | Penicillin |
|---|-------------|------------|-----------|------------|-------------|------------|
| Tolerance or safe level | 10 ppb | 10 ppb | 100 ppb | 20 ppb | 10 ppb | 5 ppb |
| Screening Test | | | | | | |
| Charm® II Tablet Beta Lactam Test (Competitive Assay) | 7.5 | 5.7 | 47 | 4.2 | 70 | 3.0 |
| Charm® SL Beta Lactam Test | 5.6 | 8.5 | 77 | 13.7 | 50 | 3.6 |
| Charm® 3 SL3 Beta Lactam Test | 8.4 | 8.0 | 79 | 20.0 | 8.6 | 3.8 |
| *Delvotest P 5 Pack (Reader) | 4.6 | 4.0 | ND | 8.2 | NA | 2.1 |
| *Delvotest P 5 Pack (Visual) | 4.6 | 4.0 | ND | 8.2 | NA | 2.1 |
| *Delvotest P Mini | 7.7 | 5.1 | NA | 7.0 | 30 | 3.1 |
| New SNAP® Beta Lactam Test Kit | 7.3 | 5.8 | 12 | 11.7 | 50 | 3.0 |

*Delvo tests are not specific for Beta-lactams only. A non-Beta lactam drug residue, such as a sulfa or a tetracycline, can cause a positive test.

The above tables are based on information found in FDA M-a-85, Revision #16 www.fda.gov/media/119810/download. This document details the list of all approved tests. New tests are approved frequently and changes to requirements can occur.

For Additional Information

Visit

www.mda.state.mn.us/residue-prevention
for the most current version of this document and further information.

Contact

Sandy Larson, DVM
Drug Residue Consultant and Outreach Veterinarian
952-207-0984 | Sandra.Larson@state.mn.us
625 Robert Street North, Saint Paul, MN 55155-2538