

SECTION VI-2 DETECTING RESIDUES OF DRUGS AND CHEMICALS IN MILK

2. DETECTING RESIDUES OF DRUGS AND CHEMICALS IN MILK

For product safety, it is important to test milk for drug and chemical residues in milk before it is sent for processing for human consumption. In addition to regulatory standards, which require milk to be tested before processing, testing milk on-farm can be a good screening method to avoid shipping potentially contaminated milk.

2.1 REGULATORY TESTING VERSUS ON-FARM USE OF KITS

At this time, Ontario has not laws governing sheep milk but in other jurisdictions by law, milk must go through regulatory testing before it is accepted for milk processing. These samples are sent to an accredited laboratory¹ so residue results are as accurate as possible. Bulk-tank milk samples are taken on-farm at milk pick-up by a certified bulk tank milk grader. When the tank trucks arrive at a processing plant, a milk sample is taken from the truck which represents a sample from all the farms picked up on that route that day. The milk will not be processed if it tests positive for any drug residues. If the milk from the truck is positive, the milk samples collected on-farm will be tested. The farm that is positive for drug residues will be financially penalized.

Milk delivered in frozen containers will be sampled and pooled once the milk has thawed. Again, any positive samples will be discarded and likely the producer will be financially penalized.

Fig. 1.



2.1.1 ON-FARM TESTING OF MILK

There are many easy-to-use test kits available to purchase to test milk on-farm for presence of inhibitors. Most veterinarians also offer a service to their dairy clients using these tests. These kits allow sampling of both individual animals, and bulk tank samples to test for drug residues. However, these tests are 100% accurate and may not be in agreement with the tests run by the processor or regulator. They can provide guidance, however should be used with caution.

Kits currently available for use in dairy cows in Canada include:

- Charm Cowside II test². It is a quick screening test for milk.
- Charm ROSA³ milk tests. There are several tests to detect many different antimicrobials at different MRL's.
 - The Charm SL₃ Beta Lactam test has been accepted by the Food and Drug Administration in the USA for use in both sheep and goat milk **and is the only one recommended for use in dairy sheep at this time** (Fig. 2)

¹ For Ontario, this is the AFL, University of Guelph <http://www.guelphlabservices.com/AFL/raw.aspx>

² <http://www.charm.com/en/products/charm-inhibition/cowside-ii/cowside-ii-learn-more.html>

³ <http://www.charm.com/products/rosa-milk.html>

- Common beta-lactam antibiotics include penicillin, ceftiofur (e.g. Excenel), cephalosporins (e.g. Cefalax, Cefadri), cloxacillin (e.g. DryClox), amoxicillin
- IDEXX SNAP Antibiotic Residue test⁴
- Delvotest SP, DSM⁵
- Neogen BETASTAR PLUS⁶

These tests will detect milk at varying MDL's, some of which may be higher or lower than the dairy cattle MRL for milk. Because not all tests will detect all classes of antibiotics, consult your flock veterinarian to discuss which test(s) to use for routine screening for inhibitors (antibiotics) in sheep milk.

2.2 TESTING A BULK TANK SAMPLE VERSUS AN INDIVIDUAL ANIMAL

An on-farm kit has the ability to sample both bulk tank milk, milk from a container or bucket, and milk from individual ewes. Testing of milk either in the tank or bucket is very useful if a treated animal has accidentally been milked and that milk commingled with milk from other ewes. If the milk sample tests positive for drug residue, the producer has the option to discard the milk from the tank or bucket and clean the milking equipment before milking the rest of the flock, not only to prevent treated milk from being shipped, but to not lose the milk from the rest of the ewes in the flock.

Individual animal testing can be used for a variety of common instances on-farm, which is why purchasing a residue kit is so beneficial for producers. The following are situations where testing milk is beneficial:

- When ewes are added to the flock and the treatment history of the flock of origin is not well documented
- If a ewe lambs earlier than expected, and dry period mastitis treatment (Section VI.5) withdrawal is in question
- With any ELDU
- If a treated animal loses its treated identification, or record
- If an animal is treated with multiple drugs at once

2.3 ACCURACY OF TESTING

Laboratory testing has the highest level of accuracy testing drug residues. With on-farm sampling kits, the accuracy is not 100% accurate, i.e. a test may be positive when the milk is OK – or of more concern, the test may be negative when the milk contains antibiotics. Additionally, kits cannot test all drugs used in livestock, so it is important to identify which drugs are being screened for to select the kit that is most appropriate for each flock.

⁴ http://www.idexx.ca/view/xhtml/en_ca/dairy/snap.jsf

⁵ http://www.dsm.com/markets/foodandbeverages/en_US/products-overview/delvotest.html

⁶ http://www.neogen.com/FoodSafety/BS_Index.asp