

# Back to Basics

by **RON TORELL**, *livestock Extension specialist, University of Nevada, Reno*

## Drug withdrawal on cull cows

The livestock industry prides itself on honesty, integrity and good-as-gold handshake deals. As an industry, do we

live up to these high moral standards? Consider the two scenarios below. What would you do?

**Scenario 1:** You have three cull cows that need to go to the sale yard — not a trailer load, just enough to be in the way around the ranch. Your neighbor is going to town and offers to haul these cows the 200-plus miles to the auction yard. The problem is, you treated one of the cows last week for foot rot and used a long-acting antibiotic with a 30-day withdrawal. You always treat at above

labeled recommendations, figuring that if a little is good, a lot is better. To complicate matters, you cannot seem to remember which black cow you treated. There is no more sign of foot rot, so why not send all three cull cows to market?

**Scenario 2:** How about forward-contracting for fall delivery a set of “all natural” spring-born steer calves? You

### Residue detection

As a company seeks approval from the Food and Drug Administration (FDA) for a new antibiotic, they have to show data from studies documenting tissue residues over time, especially looking at residues in the kidney, liver, meat, etc. They also have to show FDA a test or tests that will detect the antibiotic or metabolites of the antibiotic, so FDA knows tests are available for its detection.

The drug company has to show the antibiotic's half-life (the time it takes for half of the drug to be eliminated from the animal's system) and its pattern of disappearance. For most drugs, the withdrawal/withholding time will be about 10 times the half-life, which would usually achieve more than 99% removal from the body. However, that depends on the curve or pattern of its disappearance, as well as its presence in specific tissues. Additional time may be added. If the pattern is not consistent, the drug won't be approved. All of this contributes to why it costs so much to get a new antibiotic approved.

How long a drug can be detected depends on the sensitivity of the test. Some equipment can detect parts per billion (ppb; comparable to a kernel of corn in a train car). If the carcass tested above a certain cutoff point, it would be condemned; if it tested below, it would be passed.

But, there are some older tests that still work and may be used. One is even for use on live animals. The concept behind a live-animal test is a producer could conduct this test and then wait longer, if needed, before sending the animal to harvest.

For this test, urine is collected from the live animal. A small disc of filter paper is soaked in the urine and then placed onto a plate of agar. A smear of live bacteria is swabbed over the agar's surface. The bacteria used is quite sensitive to antibiotics. If any antibiotic is present in the urine, the bacteria will not grow

barely have a truckload; however, if all goes well, you can honor the contract. You received a premium as “all natural,” signed on the dotted line and received a hefty deposit. In mid-summer you had a foot rot, pinkeye and pneumonia outbreak. You ended up treating 20% of the calves with a long-acting antibiotic. Based on your signed contract, your truckload of calves is

reduced to 80% after you remove the treated calves from the mix. The market has since dropped by 20% of what it was when you sold the truckload. There are 90 days between when you treated these calves and when you ship. What do you do?

### **The harvest scenario**

For the moment, let's forget the integ-


rity issue and examine testing procedures at the harvest plant. Random testing is used at U.S. Department of Agriculture (USDA)-inspected plants. Additionally, any animal is tested that originates from a list of producers who are on the residue violators list.

Any red-flag cattle are automatically tested. These include carcasses with inflamed or discolored lungs or other or-

gans, fresh injection sites, and unthrifty-looking animals. Good inspectors can anticipate animals that may have been recently treated. The needles and the product leave their mark under the skin or in the muscle for quite some time.

If a carcass looks suspicious, it is side-railed, and a quick test is performed at the plant. If the quick test is positive,

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around the disc, showing the presence of that antibiotic in the animal.

There are other tests with quick turnaround times that have been developed for use in harvest plants. One of the tissues most commonly used for testing is the kidney, because it processes the disposal of most drugs and antibiotics. That is why the use of the antibiotic gentamicin is strongly discouraged (and is illegal in food animals). It will retain residues in the kidneys for 18 months.

When veterinarians prescribe drugs for a use not prescribed on the label, it is known as extra-label use. The veterinarian then becomes liable for withdrawal times. Producers who use products according to label directions and sell animals should always maintain accurate records so that if an animal shows residues, they can demonstrate that the label was followed precisely. If producers, under the guidance of a veterinarian, use an extra-label drug, they should maintain even better records, including written directions from their veterinarian outlining the withdrawal time.

There is also a variation among animals. For example, if one cow has poor kidney function, she may clear the drug much more slowly than a healthy animal. Sick animals do not have the organ systems of healthy animals, so there is always the possibility that a treated animal may show residues even if the proper label directions were followed. It is a lot of work to maintain a quality product and to be able to demonstrate that a quality assurance program is in place.

The take-home message is to keep good treatment records, read and follow label directions, and always be conscious of your responsibility to produce a wholesome product.

— by *Ron Torell*

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the tissue is sent forward and an in-depth test is conducted that can detect residues at finer levels. Producers who get caught with positive animals are punished economically by the packer. This encourages them and others to better observe the withdrawal times.

Testing is also done at breaker plants, after the harvest plant and prior to retail. For example, one gondola of hamburger may represent muscle tissue from more than 250 animals. Once ground and mixed, one hamburger will represent this same number of cows identified to that gondola. A sample is tested from all these gondolas for *E. coli* and drug residues. If violations are found, the entire batch must be disposed of. The gondola is traced back to the plant of harvest and, if the plant kept good records, it can trace it back to the owners of cattle that went into that harvest mix. You can imagine the economic loss to all segments of the industry because of one violation.

**Do your part**

The short answer to all of this is that, as producers, we have to recognize that we are not just producing cattle — we are producing a meat product for someone's table. We have to assure that the product meets the standards established, not just what we might get away with. Also, those cull cows don't all go to hamburger. Many of their cuts end up at the cheaper steak houses and at the sandwich shops with sliced roasts, etc. That is another critical reason for avoiding muscle injections, even in cull cows.

The moral of the story is, do your part! Read and follow label directions, and live up to the industry standards of integrity and honesty. Resist the temptation to take shortcuts. Tell your neighbor you will have to wait on all three cull cows for 30 days. Contact your buyer and tell him about your dilemma with filling the contract with "natural" calves.

Every producer who is Beef Quality Assurance (BQA)-certified has agreed to follow drug withdrawal times on all antibiotics. Does your signature live up to the integrity and honesty of industry standards? After all, we are, to a large degree, on the honor system.

If you would like to discuss this article or simply would like to talk cows, do not hesitate to contact me at (775) 738-1721 or at [torellr@unce.unr.edu](mailto:torellr@unce.unr.edu).

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**Author's Note:** Portions of this article were compiled from information provided by Dr. Clell Bagley, Utah State University veterinarian; David Thain, Nevada Department of Agriculture state veterinarian; and meat inspectors with the USDA inspection service.