Make wise use of antibiotics

By ROBERT FEARS

As users of antibiotics, it is the responsibility of those in the beef industry to understand and use them correctly, and to share accurate information with consumers.

Anyone connected to the livestock industry is aware of the controversy surrounding overuse of antibiotics in animal health. As with most public issues, a lot of the information disseminated by media, special-interest groups and uninformed consumers is fictitious.

“The issue arose from concerns over development of antibiotic-resistant bacteria in food animals that can become a human health problem,” says Virginia Fajt, a veterinarian with Texas A&M University. “Antibiotic residues in food are not necessarily the concern.”

Regulating residue

The Food and Drug Administration requires residue testing in meat, Fajt explains, and has assigned to each product a necessary time period for it to degrade below possible harmful levels in meat and milk.

She adds that the length of the withdrawal periods includes wide safety margins to ensure food safety.

As defined by the Food Science Network, an antibiotic is a pharmaceutical drug used to treat infections caused by bacteria and other microorganisms. Some other antibiotic or antimicrobial substances include ionophores, alcohol, soap and bleach.

Opponents claim 80% of all antibiotics sold are used in food animals, which is somewhat inaccurate because ionophores are included in those statistics. Ionophores are technically an antibiotic, but they are not used in human medicine, so the possibility they might cause antibiotic-resistant bacteria is remote because they have a very different mode of action.

“Antibiotics are administered in the cow-calf and stocker beef cattle production sectors by injection primarily for respiratory diseases,” says Fajt. “Examples of macrolide chemistry products are tularmycin [Draxxin] and tilmicosin [Micotil]. From the tetracycline group of antibiotics, oxytetracycline [Liquamycin and LA 200] is most often used. Feedlots sometimes administer antibiotics as a feed additive, and tylosin [Typlan], a macrolide, is one example.”

Resistance fundamentals

“Antimicrobial resistance occurs naturally and is not caused by antimicrobial use,” says the Canadian Beef Cattle Research Council. “If the antimicrobial is used when an antimicrobial-resistant disease-causing microbe or pathogen is present, the antimicrobial-resistant pathogen will have a competitive advantage over its susceptible cousins.”

“When the antimicrobial continues to be used, the resistant pathogens will survive, reproduce and become more common, while the susceptible pathogens will gradually become few in number. In this case, the antimicrobial will become less effective, and the animal will not respond to continued treatment with the same product, even if the dose is increased.”

Bacteria become resistant through several mechanisms, reports the Food Science Network.

Certain bacteria have the ability to transfer resistance genes and can confer antibiotic resistance on previously susceptible bacteria to which they are unrelated. Some bacteria have the ability to neutralize the effect of the antibiotic. Others can release the antibiotic before it can affect them.

Fajt says antibiotic-resistant bacteria could theoretically be transferred to humans from food animals.

“There are several hypothetical steps required for the transfer, and a few of them have been documented through observation and epidemiological studies,” she explains.

But she adds, “At the present time, there is no conclusive evidence that this occurs.”

Proposed compromise

Because of the theoretical risk, opponents say use of antibiotics in livestock should be limited or eliminated. The animal industry counters that there is a demonstrated risk to animal health if antibiotics are not available.

A compromise between the two groups is the proposed FDA directive that continues to permit the use of antibiotics in feed, but only with veterinarian oversight. Most animal pharmaceutical companies are voluntarily withdrawing their antibiotics from over-the-counter sales and putting them under the directive.

They are also removing the growth promotant use from their product labels. Ionophores will still be available OTC as growth promotants, since they are not used in human pharmaceuticals.

Once the new directive has been made final, it will represent one workable solution to the antibiotic controversy. However, it is vital for beef producers to keep talking to consumers about the need for antibiotics in animal health, and keep using antimicrobial products with caution and responsibility on their livestock.

Fears writes from Georgetown, Texas.