Is Antibiotic Use In Animal Feed A Risk To Human Health?

COLUMBIA, MO.

Increased growth rate from sub-therapeutic use of antibiotics in animal agriculture is just a side benefit, according to experts in the field. Strategic use of antibiotics is only one part of a comprehensive herd health program, along with diagnostics, vaccinations, bio-security, facility maintenance, and animal care.

"Studies have not clarified why feeding small sub-therapeutic doses of antibiotic to animals increases their rate of weight gain," said Dr. Beth Young, University of Missouri Extension, Commercial Agriculture Program, swine veterinarian. "It is possible that the antibiotics inhibit bacteria that are causing sub-clinical disease, or inhibit other microbes that would normally thrive in the animals' intestines, thereby allowing the animals to utilize their food more effectively."

However, Young believes that producers have responded to what consumers want and have already reduced the amount of sub-therapeutic doses, down-sizing growth promotion effects.

Most authorities do not believe that antibiotic use in animals poses any major risk to human health. Recent outbreaks of the staph infection methicillin-resistant Staphylococcus aureus (MRSA) may have come from workers who handled animals that had been fed antibiotics. However, the humans were more likely infected with the very common, community-acquired, strain of MRSA (known as CA-MRSA) from being in close contact with infected people – not animals. MRSA associated with livestock is a different strain, known as Strain 398.

Regardless, research demonstrates that when MRSA has been found on meat, it is present in extremely low levels. Both the Centers for Disease Control and Prevention (CDC) and the European Food Safety Authority conclude that the likelihood of MRSA being spread by handling or eating meat is very low.

The Danish Pilot Program, begun in 1998, banned the use of sub-therapeutic antibiotics in swine. The experiment resulted in an increase of diarrhea in pigs and a 25 percent increase in deaths. Denmark has seen an increase in bacterial food-borne illnesses such as salmonella and campylobacter since the ban. Many small farmers have been forced out of business because of livestock losses. The number of Danish farms has declined from 25,000 in 1995 to under 10,000 in 2005.

Dr. Young stated, "Though the Danish experiment was brought about by concern for antibiotic resistance in humans to drugs used for both humans and animals, they did see a reduction of antibiotic resistant bacteria in livestock, but that has not resulted in a decrease in antibiotic resistant infections in humans."

Although Denmark's swine industry has slowly rebounded in the twelve years since the ban, they now export about 5 million young pigs to other European markets to be fed. Therefore, their net growth in the industry is about five percent.

If the United States and other major swine producers prohibited prophylactic antibiotic use, the estimated cost of production could increase as much as $6 per hog. Industry authorities such as the National Pork Board claim that increase would force many present market producers to go under, as occurred in Denmark.

Instead of proving that antibiotics were harmful, the Danish experiment actually proved that antibiotics were beneficial in keeping pigs healthy. Once a pig does become visibly sick, the Danish government allows farmers to use antibiotics such as tetracycline, an antibiotic similar to those used in humans. The use of these antibiotics has risen dramatically since the ban – contradicting the intent of the ban.

"Consumers tend to confuse antibiotics for growth promotion with growth hormones, said Young. "No hormones are used to improve growth in swine production. And, sub-therapeutic antibiotics are generally only administered in feed where their use is strictly controlled. By law, no extra-label use of in-feed antibiotics is permitted, which means that they can only be used as indicated on the drug's label, and that is determined by the FDA. In the case of some commonly used antibiotics, called Veterinary Feed Directive drugs, a feed mill must have a direct order from the producer's veterinarian before they can sell feed containing that antibiotic to a producer."

In the United States, the Food and Drug Administration (FDA) regulates antibiotic use in both humans and animals. Antibiotic residues are tested more thoroughly for animals than for humans. The drugs must be withdrawn within a tightly controlled period of time prior to meat processing to ensure there are not issues with drug residues in the meat.

A March audit report by the USDA's Office of the Inspector General (OIG) has called for even stricter testing and residue standards. The report recommends an expansion of the variety of substances tested, improvements in methodology for sampling residues, and collaborating to set tolerances for additional residues.

The meat production industry is divided on the issue. Some do not deny that there has been a spread of antibacterial resistance in humans, nor that agricultural use may contribute to the problem. However, the industry as a whole contends that the problem stems from overuse of all antibiotics, including therapeutic and preventative use in both animals and humans.

Alexander S. Matthews, president and CEO of the Animal Health Institute (AHI), believes that, "The removal of antibiotics from animal feed…would lead to increased animal disease, a reduction in food safety and gain little, if anything, in the effort to control resistance."

Dr. Ray Massey, University of Missouri Extension, Commercial Agriculture Program, economist, said, "The May 2001,USDA Economic Research Service's review of literature on banning antimicrobial drug use in livestock production showed that all studies indicate that such action would initially decrease feed efficiency, raise food costs, reduce production, and raise prices to consumers." Massey believes that banning sub-therapeutic antibiotics could have serious economic effects on the industry and on consumers.

The latest study (published in 1999) included in the USDA report indicated that a ban on antibiotic drug use would have resulted in producers losing $160 million, but consumers losing $748 million. "An important concept to remember," said Massey, "is that regulatory changes to production have impact on both producers and consumers – sometimes consumer loss exceeds producer loss." Δ