



## Questions and Answers about Antibiotics

The following are some commonly asked questions and answers about antibiotic use in animal agriculture. They were provided by the Animal Health Institute, an association that represents manufacturers of animal health products.

### **W**hat is antibiotic resistance?

Antibiotic resistance is the ability of certain bacteria, which are normally destroyed by a particular antibiotic, to survive exposure to that antibiotic. Doctors prescribe antibiotics that are known to kill or inhibit the growth of the specific bacteria causing a particular disease. Many bacteria, however, are naturally insensitive – or immune – to some antibiotics. That is why doctors prescribe certain antibiotics and not others for various diseases.

### **H**ow does antibiotic resistance occur?

Antibiotic resistance can occur in three ways: (1) in any group of bacteria, there are some individual bacteria that are naturally stronger than others and these stronger bacteria can survive antibiotic treatment and reproduce more of their kind; (2) a small percentage of bacteria may be naturally resistant to certain antibiotics, and (3) antibiotic resistance can be transferred from one type of bacteria to another through genetic material called plasmids.

### **C**an antibiotic resistance in animals be transferred to humans and result in untreatable diseases?

After more than 30 years of study, evidence shows that if animal-to-human transference actually happens, it is a rare occurrence. There is no evidence that shows that

transferred organisms actually thrive or cause disease in humans.

### **W**hat is the difference between therapeutic and subtherapeutic use?

Antibiotics are used therapeutically to treat bacterial infections. Therapeutic doses are used for short periods of time to treat an active infection. Antibiotics are used at subtherapeutic, or low levels, to prevent bacterial disease and to improve feed efficiency. Subtherapeutic doses are used generally in an animal's feed and water.

### **W**hat is the animal pharmaceutical industry doing about the issue of antibiotic resistance in farm animals?

The animal health products industry is doing several things. First and foremost, animal drug manufacturers care about the safety of the products they produce. Because they care, industry has been actively researching this issue since it was first brought to attention in the 1960s. The animal health products industry has funded numerous independent studies on the issue, and continues to review and explore new research. Also, when developing a new animal pharmaceutical, manufacturers carefully determine how that product should be used in order to most responsibly administer to the needs of the animal as well as people who eat meat, milk and eggs.

The Food & Drug Administration currently requires resistance testing for certain antibiotics to ensure that the products do not significantly increase bacterial resistance in animals. Animal pharmaceutical manufacturers understand the

importance of these tests. In fact, manufacturers are currently drafting a proposal to submit to FDA's Center for Veterinary Medicine to improve resistance testing of products required before they can receive approval. Manufacturers are redesigning the tests to make them even more effective as public health measures.

And, finally, manufacturers are continually searching for new and better ways of doing things. New product development is an ongoing process for animal drug companies. In fact, animal health companies spend 20 cents of every dollar they earn researching and developing new products to care for the health of animals. New product development is important because in order to treat animals and keep animal health products effective, farmers and veterinarians need access to a variety of products.

## **What are farmers and veterinarians doing about the issue of antibiotic resistance in farm animals?**

Quality assurance programs, developed by livestock and poultry producers with help from the animal health products industry, promote proper and effective use of all animal health products, including antibiotics. These programs stress the importance of a strong working relationship between producers and their veterinarians. They also teach efficient management practices and stress proper drug use as a way of improving the safety of the food supply.

Veterinarians play a crucial role in the judicious use of animal health products, including antibiotics. Veterinarians keep detailed records on the animals and herds they treat. This patient history helps them choose effective, safe therapies.

The agriculture industry is also exploring new processing methods which can help eliminate harmful bacteria in meat.

## **Is there anything that can be done during food preparation to lessen the risk of becoming ill due to exposure to food-borne bacteria?**

Yes. Since bacteria is naturally present in feed, it is important to carefully prepare, handle and store food. Thorough cooking can eliminate the presence of bacteria in feed, prompt refrigeration can prevent bacteria from contaminating leftovers and washing hands and utensils before and after handling raw meat products can halt the spread of bacteria to other foods.

## **What are antibiotic residues and how are they monitored?**

Antibiotic residues are trace amounts of an antibiotic remaining in meat after slaughter or in milk. FDA has established levels of antibiotic residues that are deemed safe and may legally be in the edible tissues of the animal at slaughter or in the milk. FDA's Milk Safety branch, along with state regulators, monitors the milk supply, and the U.S. Department of Agriculture Food Safety & Inspection Service randomly tests slaughtered animals to ensure that meat is free of illegal residues.

## **Do antibiotic residues increase the risk of developing antibiotic resistance?**

No. Antibiotic residues and antibiotic resistance are often confused but they are not related. When talking about the transfer of antibiotic resistance from animals to humans, scientists and others are referring to the transfer of resistant bacteria, not trace levels of antibiotics.

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