



Antibiotics and the Meat Industry
Article 1:

Antibiotic Debate Overview

Ranchers and farmers have been feeding antibiotics to the animals we eat since they discovered decades ago that small doses of antibiotics administered daily would make most animals gain as much as 3 percent more weight than they otherwise would. In an industry where profits are measured in pennies per animal, such weight gain was revolutionary.

Although it is still unclear exactly why feeding small "sub-therapeutic" doses of antibiotics, like tetracycline, to animals makes them gain weight, there is some evidence to indicate that the antibiotics kill the flora that would normally thrive in the animals' intestines, thereby allowing the animals to utilize their food more effectively.

The meat industry doesn't publicize its use of antibiotics, so accurate information on the amount of antibiotics given to food animals is hard to come by. Stuart B. Levy, M.D., who has studied the subject for years, estimates that there are 15-17 million pounds of antibiotics used sub-therapeutically in the United States each year. Antibiotics are given to animals for therapeutic reasons, but that use isn't as controversial because few argue that sick animals should not be treated.

The biggest controversy centers around taking antibiotics that are used to treat human illnesses and administering them to food animals. There is an increasing amount of evidence suggesting that the sub-therapeutic use of antibiotics in food animals can pose a health risk to humans. If a group of animals is treated with a certain antibiotic over time, the bacteria living in those animals will become resistant to that drug. According to microbiologist Dr. Glenn Morris, the problem for humans is that if a person ingests the resistant bacteria via improperly cooked meat and becomes ill, he or she may not respond to antibiotic treatment.

Concern about the growing level of drug-resistant bacteria has led to the banning of sub-therapeutic use of antibiotics in meat animals in many countries in the European Union and Canada. In the United States, however, such use is still legal. The World Health Organization is concerned enough about antibiotic resistance to suggest significantly curbing the use of antibiotics in the animals we eat. In a recent report, the WHO declared its intention to "reduce the overuse and misuse of antimicrobials in food animals for the protection of human health." Specifically, the WHO recommended that prescriptions be required for all antibiotics used to treat sick food animals, and urged efforts to "terminate or rapidly phase out antimicrobials for growth promotion if they are used for human treatment."



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Although conclusive evidence directly linking the use of drugs in food animals to an increase in drug-resistant bacteria that make people sick has not been uncovered, a number of recent studies suggesting such a link concern many scientists. "There is no evidence that antibiotic resistance is not a problem, but there is insufficient evidence as to how big a problem it is," says Dr. Margaret Mellon, with the Union of Concerned Scientists.

In one study published in the *New England Journal of Medicine* on February 6, 2002, researchers found links that strongly suggested that the people who developed Cipro-resistant bacteria had acquired them by eating pork that were contaminated with salmonella. The report concluded that salmonella resistant to the antibiotic flouroquine can be spread from swine to humans, and, therefore, the use of flouroquinolones in food animals should be prohibited.

Another *New England Journal of Medicine* study from Oct. 18, 2001, found that 20 percent of ground meat obtained in supermarkets contained salmonella. Of that 20 percent that was contaminated with salmonella, 84 percent was resistant to at least one form of antibiotic.

CIPRO AND BAYTRIL

Some, including the FDA, believe the overuse of Baytril, an antibiotic used to treat sick birds, led to an increase in treatment-resistant bacterial infections in humans. Baytril is used by poultry growers to protect chickens and turkeys from *E. coli* infection. The size of commercial chicken flocks precludes testing and treating individual birds, so when a veterinarian diagnoses one infected bird, farmers treat the whole flock by adding the drug to its drinking water. General use of Baytril, therefore, falls in the gray area between therapeutic and sub-therapeutic.

Baytril is the sister drug to Cipro, which is used to treat and prevent anthrax as well ascampylobacteriosis and salmonellosis in people. The Food and Drug Administration, doctors, and consumer groups have all urged that Baytril be removed from the market on the grounds that its use in animals may eventually compromise the power of Cipro and similar antibiotics to fight disease in humans. Cipro and Baytril belong to a class of drugs known as fluoroquinolone, among the most powerful antibiotics currently available.



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Baytril first came up for approval for use in chickens six years ago. Physicians have used fluoroquinolones to treat food-borne illness since 1986, but fluoroquinolone-resistant bacteria were rare until 1995, when the FDA approved the use of these drugs in drinking water for poultry. The FDA's rough estimate, using 1999 data, is that use of fluoroquinolones in chickens resulted in over 11,000 people that year contracting a strain of the campylobacter illness that was resistant to fluoroquinolones, contributing to unnecessarily severe disease.

When the FDA proposed pulling Baytril use in chickens a year ago due to sharp increases in resistance to fluoroquinolones in campylobacter bacteria, one of the two manufacturers voluntarily withdrew its product. The other, Bayer, did not.

Bayer officials continue to offer the human drug Cipro at reduced rates to the American public, saying that they are not convinced that the use of fluoroquinolones in animals can be blamed for increased resistance in people. Until more proof is found of the specific danger to humans, they will not withdraw their product from the chicken market.

"Antibiotic Debate Overview," from the FRONTLINE website, Modern Meat (<http://www.pbs.org/wgbh/pages/frontline/shows/meat/safe/overview.html>) © 1995
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Glossary of Terms for Research Articles
(One set for each Research Folder)

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flora	the collection of bacteria, fungi, and other microorganisms normally occurring on or in the bodies of humans and other animals: intestinal flora
therapeutic	of, pertaining to, or capable of healing
resistant	able to withstand something; not affected by
terminate	to end
salmonella	a type of bacteria that may enter the digestive tract of humans and other mammals in contaminated food and cause abdominal pains and violent diarrhea
prohibit	to forbid by authority or law