

# Rationale, Regulations, and Product Characteristics Supporting Judicious Antibiotic Use in Food Animals

#### Antibiotics and Resistance Concerns

The introduction of antibiotics in the 1940s revolutionized medicine, saving the lives of millions of people afflicted with a range of infectious diseases. Today, antibiotics remain as the primary tools for treating bacterial infectious diseases, and many modern medical practices (e.g., organ transplantation, chemotherapy, orthopedic surgery) would be classified as extremely high-risk procedures without the availability of antibiotics.

Soon after the introduction of antibiotic drugs from multiple chemical classes, antimicrobial resistance evolved in some bacteria and the efficacy of some drugs was reduced. The epidemiology of antibiotic resistance is complicated not only by the ability of bacteria to spread but also by the ability of genes responsible for resistance to transfer between bacteria. The spread of resistance has been attributed to people, animals, animal products, or environmental contamination, though much of the evidence for such transmission is only circumstantial. However, the spread of zoonotic bacteria (e.g., Salmonella, Campyloba)cferm animals to man via the food supply is clearly beyond argument.

For many years the World Health Organization (WHO) has recognized antibiotic resistance as a significant and increasing international public health problem! Because of antibiotic resistance, some

pathogens that formerly responded to antibiotic



### Food-Animal Antibiotics in Europe

Antibiotics were introduced into veterinary medicine in the 1950s and used for therapy, disease prevention (prophylaxis), and growth promotion. Initially, all available chemical classes of antibiotics could be used as antimicrobial growth promoters (AGP), typically at sub-therapeutic dose levels. However, concerns about the possible adverse effects of veterinary antibiotic use on human health led to the 1968 appointment in the United Kingdom of the Joint Committee on the Use of Antibiotics in Animal Husbandry and Veterinary Medicomaired by Dr. M. Swann). The subsequent report recommended that antibiotics should not be used as AGP if the same drugs were used as therapeutic agents in human or animal medicine, or if the agents were associated with the development of cross-resistance to antibiotics used in people. Thus, the 'Swann Report' became the foundation for a policy pufudentuse of antibiotics and for regulations regarding antibiotic use in many western European countries.

The global use of AGP continued after release of the Swann Report, but Sweden subsequently banned all AGP in 1986 and soon after Denmark and Norway most significant pathway for human exposure to resistant bacteria that have emerged as a consequence of antimicrobial drug use in animals.

The risk analysis evaluation is comprised of the following elements:

- ! hazard characterization (drug properties, microbiology, and resistance information);
- ! release assessment (estimation of emergence or selection of resistant bacteria in the food animal):
- ! exposure assessment (likelihood of human exposure to foodborne bacteria of human health concern through animal-derived food products);
- ! consequence assessment (the human medical importance of the antimicrobial drug);
- ! risk estimation (integrates the results from the release, exposure, and consequence assessments treatment that targets a spcific infection in swine. into an overall risk estimation associated with the proposed use of the drug).

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The risk-estimation phase provides an overall conclusion, a qualitative indication of the potential risk to human health of the proposed use of the antimicrobial animal drug. The FDA then uses the overall risk estimation ranking, along with other relevant data and information submitted in support of the NADA, to determine whether the drug is approvable under specific risk-management conditions. This process helps to identify steps necessary to manage the risks associated with the proposed use of an antimicrobial drug in animals.

More recently, the FDA released a number of documents concerning uses of medically important antibiotics in animal agriculture, with the intent of preventing unnecessary use and promoting prudent use. Implementation of this new US policy requires that such antibiotics be used only for expeutic purposes disease treatment, control, and prevention, and under the supervision of a licensed veterinarian This policy will assure that medically important medicines are used in animal health similar to how they are used in human health, under the supervision of a licensed professional and only to address disease challenges at various stages. As a result, use of AGP will eventually be phased-out in the US.

## AVLOSISupports Judicious Use

AIVLOSINWater Soluble Granules, from Pharmgate Animal Health, is a new water-soluble formulation containing tylvalosin, a novel macrolide antibiotic with potent activity agains Lawsonia intracellularis, the cause of swine ileitis. IALOSINis indicated for control of porcine proliferative enteropathy (ileitis) when administered at 50 ppm in drinking water of swine for 5 consecutive days (no pre-slaughter withdrawal needed in the US).

AIVLOSINfully complies with the concept of judicious antimicrobial use. To receive FDA approval, AIVLOSINsatisfied all elements of the FDA risk-assessment model. When used according to label instructions, AVLOSINis the ideal medication for the judicious and effective control of ileitis due to its low effective therapeutic dose rate and short duration of treatment that targets a spcific infection in swine. Furthermore, AVLOSINis only available for use by or on the order of a licensed veterinarian.

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