

# The Impact of Antibiotic Use on Animal Surgery and Animal Feed: A Review of the Relevant Literature

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## ABSTRACT

The administration of antibiotics in animal surgery and animal feed is a widely accepted practice intended to mitigate infection risks. Using antibiotics in animals is one of the most effective treatments available. However, when antibiotics are used imprudently can lead to severe consequences for animal health and may affect the ecosystem in many ways. This literature review aims to assess the effects of antibiotic use in animal surgery and animal feeding. The review explores the associated risks and benefits.

This review aims to present an overview of the impact of antibiotics on animals in both surgical and feeding ways. Including the advantages and disadvantages that affect animals and the

environment. To benefit those who are interested in veterinary or antibiotics administration

**Keywords:** Antibiotics, Animal surgery, Animal feed, Animal Health, Veterinary medicine, Livestock

## INTRODUCTION

Antibiotics stop bacteria from spreading in animals by binding to the active site of the enzyme. Therefore, we use antibiotics in the treatment of infected animals

### Type of antibiotic

Categorized based on their mechanism of action:

Inhibitors of Cell Wall Biosynthesis	Penicillins, Cephalosporins, Bacitracin, Vancomycin, Risrocetin Cycloserine, Novobiocin, Ristomycin
Membrane permeability	Amphotericin B, Polymyxins, Colistins, Nystatin, Valinomycin, Gramicidin, Candicidin, Macrotetralides, Circulins, Filipin
Protein synthesis inhibitor	Tetracyclines, Aminoglycosides, Macrolides, Chloramphenicol, Erythromycin, Lincomycin, Puromycin, Spectinomycin, Cyclohexamide, Pactamycin, Fusidic acid, Streptogramins, Sparsomycin, Kasugamycin, Actinomycin, Mitomycin C, Rifamycin, Nalidixic acid, Chromomycin, Mithramycin, Olivomycin, Echinomycin, Acridines, Ethidium Streptolydigin, Pluramycin, Rubiflavin, Anthramycin, Streptonigrin
Antimetabolites	Sulfonamides, Trimethoprim, Sulfones, Isoniazid

The membrane of bacteria has lipoproteins for substances to pass through. Bacteria consist of three layers: the protein layer, the lipid layer and the other protein layer.

Antibiotics will pass these three layers and disrupt the structure of lipids and proteins.

The use of antibiotics must be controlled carefully and not overused to avoid drug resistance

## MATERIALS & METHODS

Retrospective research on antibiotic resistance and antibiotic effects among animal populations was used to gather information on antibiotics and infection risk. The research data will be collected from online medical research databases on antibiotics used in animals and information about the rate of use of antibiotics, the effects and the risk of infection

## RESULT

In the drug susceptibility research conducted on dogs treated at a Small Animal Teaching Hospital of the Faculty of Veterinary Medicine KhonKaen University, it was observed that a significant proportion of bacteria exhibited high levels of resistance to multiple drugs.

Research in Kenya by the Global Antibiotic Resistance Partnership (GARP) reported that 70% of the antibiotics are used for treating chickens, pigs and cows with only 30% for human consumption. Antibiotics used to be common among farmers. They provide antibiotics to their animals to treat their health and prevent illnesses, classifying farmers' use of antibiotics as overuse.

In Europe, antibiotics were originally given to animals to enhance their growth. The use of antibiotics for growth promotion was prohibited throughout the EU in 2006. According to the World Organization for Animal Health, worldwide 108 countries discontinued allowing growth promotion, but it's still allowed in 40 countries. In the UK 75% of farm antibiotic use is for group treatments, In Europe the figure is even higher at 86%. In 2022 the EU is bringing in new regulations to end the routine use of antibiotics.

Antibiotic residues and drug-resistant bacteria released outside through meat, natural water sources, and environmental formulas increase the risk of widespread antibiotic-resistant infections in the community. Therefore, the use of antibiotics should be reduced. Grouping in farm animals

Veterinarians find it necessary to use a combination of antibiotics to optimize the efficacy of the treatment or treat uncertain diseases. Using a combination of drugs helps broaden the spectrum of coverage, enabling the treatment to have a wider impact. When using a combination of antibiotics for treatment, it's important to ensure that each antibiotic is administered in sufficient quantity. When veterinarians encounter infections in animals, treatment

options may become limited to avoid antibiotic resistance.

Overuse of antibiotics is torturing animals and also affects humans. Animals that have been treated with antibiotics in livestock should not be consumed as this creates high levels of antibiotic residue in the product and affects humans who consume food from animals treated with antibiotics

## CONCLUSION

In the study, we found that the use of antibiotics in animal surgery and in treating animals should be used with correct assessment, as overuse can be torture to the animal, and cause severe conditions that may lead animals to death.

Furthermore, using antibiotics in livestock can be risky to human health. Veterinarians should have strict control over the administration, when combining different antibiotics, it must be in the correct quantity and optimized to the specific needs of the animal to be effective for the animal treatment

### *Declaration by Authors*

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