

# Antibiotic Resistance in Poultry and farm Animals and its Solution

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## ABSTRACT

This article discusses the issue of antibiotic resistance in poultry birds and other farm animals, primarily due to the overuse and misuse of antibiotics in the agricultural industry. The article explains how this practice has led to the development of antibiotic-resistant bacteria in animals, which can then be transmitted to humans, and how it has affected the food chain. Additionally, the article explores the causes of antibiotic resistance in farm animals, including overuse, misuse, the spread of antibiotic-resistant bacteria, and the lack of diversity in farming practices. It also suggests possible solutions such as reducing antibiotic use, promoting animal health, improving farming practices, and alternatives to antibiotics such as probiotics, prebiotics, antimicrobial peptides, hybrid Peptides and phytogetic compounds.

### Introduction

Antibiotic resistance is a growing concern in both human and animal health. The overuse of antibiotics in the agricultural industry, particularly in poultry and other farm animals, has contributed significantly to this problem. In this article, we will explore the causes and consequences of antibiotic resistance in poultry birds and farm animals and look at possible solutions to this problem [1].

### Antibiotic Resistance in Poultry Birds and Farm Animals

The use of antibiotics in the agricultural industry began in the 1940s, primarily as a growth promoter and to prevent and treat bacterial infections in animals. However, the widespread and excessive use of antibiotics in the industry has led to the development of antibiotic-resistant bacteria. Poultry birds and other farm animals are given antibiotics prophylactically, meaning that they are given antibiotics even when they are not sick. This is done to prevent infections and to promote growth. However, this practice has led to the development of antibiotic-resistant bacteria in these animals. One of the major concerns is the transfer of antibiotic-resistant bacteria from animals to humans. People who work with poultry and other farm animals, including farmers and slaughterhouse workers, are at a higher risk of being exposed to antibiotic-resistant bacteria. This can lead to the spread of these bacteria in the community and can cause serious illnesses that are difficult to treat. Another concern is the spread of antibiotic-resistant bacteria through the food chain [2]. Antibiotic-resistant bacteria can be present in the meat, eggs, and other animal products that people consume. This can lead to the spread of these bacteria to humans, causing illnesses that are difficult to treat [3].

### Causes of Antibiotic Resistance in Poultry Birds and Farm Animals Overuse of Antibiotics

One of the main causes of antibiotic resistance in poultry birds and farm animals is the overuse of antibiotics. Farmers often use antibiotics as a preventative measure to keep their animals healthy, even when there is no evidence of disease. This can lead to the development of antibiotic-resistant bacteria, as the bacteria are exposed to antibiotics on a regular basis. Overuse of antibiotics also occurs when farmers use antibiotics to promote growth and improve feed efficiency. This is a common practice in the poultry industry, but it can lead to the development of antibiotic-resistant bacteria.

### Misuse of Antibiotics

Misuse of antibiotics is another cause of antibiotic resistance in poultry birds and farm animals. This occurs when antibiotics are not used correctly, such as when farmers use the wrong dose or administer antibiotics for the wrong length of time. It can also occur when farmers use antibiotics that are not approved for use in animals or use antibiotics that are not effective against the bacteria causing the infection. This misuse of antibiotics can lead to the development of antibiotic-resistant bacteria.

### Spread of Antibiotic-Resistant Bacteria

The spread of antibiotic-resistant bacteria is another cause of antibiotic resistance in poultry birds and farm animals. Once antibiotic-resistant bacteria develop, they can spread from animal to animal and even to humans. This can occur through direct contact with infected animals or through contact with contaminated surfaces or food. The spread of

antibiotic-resistant bacteria can be difficult to control, as these bacteria can survive in the environment for long periods of time.

### Lack of Diversity in Farming Practices

The lack of diversity in farming practices is also a cause of antibiotic resistance in poultry birds and farm animals. Large-scale farms often use monoculture practices, where a single species of animal is raised in large numbers. This can lead to the spread of disease and the need for antibiotics. Diversifying farming practices can help reduce the need for antibiotics by promoting healthier animals and reducing the spread of disease.

### Potential Solutions to Antibiotic Resistance in Poultry Birds and Farm Animals

#### Reduce Antibiotic Use

Reducing antibiotic use is one of the most effective ways to address antibiotic resistance in poultry birds and farm animals. Farmers can do this by using antibiotics only when necessary and following proper dosing and treatment protocols. This can include using diagnostic tests to identify the cause of an infection before administering antibiotics. Farmers can also work with veterinarians to develop herd health plans that promote the use of non-antibiotic treatments and preventative measures [2, 3].

#### Promote Animal Health

Promoting animal health is another solution to antibiotic resistance in poultry birds and farm animals. This can include improving animal nutrition and housing conditions, as well as reducing stress on the animals. By promoting animal health, farmers can reduce the need for antibiotics and improve overall animal welfare.

#### Improve Farming Practices

Improving farming practices is another solution to antibiotic resistance in poultry birds and farm animals. This can include diversifying farming practices, such as rotating crops or using multiple species of animals. It can also include implementing biosecurity measures to reduce the spread of disease and investing in technology that can help reduce the need for antibiotics.

#### Alternatives of Antibiotics

The use of antibiotics in animal feed has been a common practice in the poultry and livestock industry for many years. However, with the growing concern of antibiotic resistance, there has been a push to find alternative methods to promote animal health and growth. In this article, we will explore some of the alternative methods that are being used to replace antibiotics in poultry and animal feed [4].

#### Probiotics

Probiotics are live microorganisms that can benefit the host animal by improving the balance of microorganisms in the gut. This can help improve digestion and overall gut health, which can lead to better immune function and disease resistance. Probiotics can also compete with harmful bacteria, which can help reduce the risk of infection [5].

#### Prebiotics

Prebiotics are non-digestible substances that promote the growth of beneficial bacteria in the gut. They act as food for probiotics, helping them to multiply and thrive. Prebiotics can be added to animal feed to promote gut health and improve the immune system [4, 5].

#### PhytoGENICS

Phytogenics are plant-derived substances that can be added to animal feed to improve animal health and performance. These substances can include herbs, spices, and essential oils. Phytogenics can have antimicrobial and anti-inflammatory properties, which can help reduce the risk of infection and improve gut health [6].

#### **Acidifiers**

Acidifiers are substances that can be added to animal feed to lower the pH of the gut. This can create an environment that is less hospitable to harmful bacteria, reducing the risk of infection. Acidifiers can also improve nutrient absorption and overall gut health.

#### **Enzymes**

Enzymes are proteins that can help break down food in the gut, improving nutrient absorption and overall gut health. Enzymes can be added to animal feed to improve digestion and reduce the risk of gut-related issues.

#### **Immune stimulants**

Immune stimulants are substances that can help improve the immune system of the animal. These can include vitamins, minerals, and other nutrients that are important for immune function. Immune stimulants can help reduce the risk of infection and improve overall health.

#### **Use of Antimicrobial and Hybrid Peptides as alternatives of Antibiotics in feed**

Antimicrobial peptides (AMPs) and hybrid peptides are another type of alternative to antibiotics in poultry and farm animal feed. These peptides are short chains of amino acids that have the ability to kill or inhibit the growth of bacteria, fungi, and viruses. They are naturally produced by many living organisms, including plants, animals, and microorganisms, and have been found to be effective against a wide range of pathogens. AMPs and hybrid peptides have several advantages over traditional antibiotics. They have a broad spectrum of activity, meaning they are effective against a wide range of pathogens, including antibiotic-resistant bacteria. They also have a low risk of developing resistance, as they work by disrupting the membrane of the pathogen rather than targeting specific cellular mechanisms. Additionally, they have a lower risk of causing side effects than traditional antibiotics, as they are naturally occurring molecules. The use of AMPs and hybrid peptides as alternatives to antibiotics in poultry and farm animal feed is still in its early stages. However, research has shown that they have the potential to be effective in reducing the need for antibiotics and improving animal health. Further research is needed to determine the optimal dosage and administration of these peptides in poultry and farm animal feed. Additionally, their cost-effectiveness and potential impact on food safety and human health need to be evaluated before they can be widely adopted as an alternative to antibiotics in poultry and farm animal feed.

#### **Conclusion**

In this article we discussed the use of antibiotics in Poultry and other Farm animal feed which is major cause of Antibiotic Resistance in animal and as well as in human and we also discussed here their solutions which will be very helpful to alter the antibiotic use.

#### **References**

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