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Bacteriophages' Function in the Optimum Health and Production of Poultry

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Abstract

Salmonella, Campylobacter, Listeria, Staphylococcus spp. and Escherichia coli infections with multidrug resistance are a problem in the poultry industry. Antibiotics alter the normal microbiota's delicate balance, resulting in symbiosis, immunosuppression and the emergence of secondary infections. Salmonella and Campylobacter colonisation in poultry has reportedly been reduced by bacteria phages. Bacteriophages can be combined with antibiotics to increase antibacterial activity because their specificity is higher than that of antibiotics. In order to specifically eradicate bacterial pathogens, species-specific phage's have been developed, such as Staphylophage .For efficient biosecurity and biosafety measures, bacteriophage products such as BacWashTM and Ecocide PX have been developed as antiseptics and disinfectants. Phage therapy's effectiveness is influenced by the duration of use, the quantity.

Keywords: Bacteriophages • Drug resistance • Biosecurity

Introduction

Thousand tonnes of carcass-weight of poultry meat are produced worldwide by the poultry industry each year, according to The European Centre for Disease Prevention and Control stated in that poultry pathogens, including strains of Campylobacter, Salmonella, Staphylococcus, Escherichia and Listeria, are a serious concern for poultry health and production. Antibiotics used to treat infections with the goal of maximising production are causing multiple drug resistance to become universal. Antibiotic use in poultry feed has significantly accelerated the emergence of resistance, which eventually spreads to humans, other animals and the environment. The viruses that cause bacteriophages. The first mention of the discovery of a whole new world of microorganism's dates back to, when the brilliant self-described Dutch optician Antoine von Leeuwenhoek shared his findings with the Royal Society of London in some of his earlier letters. But the study of microbes as a distinct field of biology did not begin until the second half of the eleventh century. Louis Pasteur's significant contributions to this field laid the groundwork for the major branches of contemporary microbiological science, including the physiology and biochemistry of microorganisms, industrial microbiology, medical microbiology and vaccinology. It was only Robert Koch's research that ultimately led to the success of bacteriological techniques in medicine and other fields. Bacteriophages are common in all environments and are thought to outnumber known bacteria by a factor of about ten, making them excellent candidates to eradicate infectious diseases.

Description

This mode of action does not harm the commensal gut flora. Bacteriophages self-replicate during treatment, so they don't need to be used frequently. A decrease in phage titter is caused by their inability to attach to and multiply in eukaryotic cells and this is linked to a significant reduction in the number of pathogenic bacteria infecting the organism. Phages are also non-toxic due to the fact that proteins and nucleic acids make up a large portion of their structure. Bacteriophage therapy is becoming more popular because of the phage's high specificity for a particular bacterial strain [1].

The emergence of bacteria that are multi- and pan-drug resistant calls for new antimicrobial agents and therapeutic approaches. As we transition from the antibiotic era to the post-antibiotic era, bacteriophages are one of the most effective treatments for the current medical crisis, providing many benefits over traditional antibiotics. It is clear that phage therapy has advanced significantly over the past two decades, but there are still gaps that need to be filled, the experience needs to be supplemented, more proof of effectiveness and safety is needed and methods and practical approaches to achieving positive outcomes for human health and wellbeing need to be reconsidered In order to be used in the production of poultry, phage-based preparations must be both safe and effective [2].

The primary requirements for any phage-based product used in poultry veterinary care, poultry production, or the poultry industry are security and effectiveness. The most crucial factor in phage-based product administration, along with dosage, delivery strategy and concurrent medication use, is timing. The ability of each bacteriophage to remain in or on food can vary, as can the application circumstances and temperature. Refrigeration temperatures may increase the persistence of bacteria pages on the surface of meat products. The approval to use bacteriophages directly in food has generated controversies and debates. There are still some drawbacks and unanswered questions despite the extensive research on bacteriophage applications and the numerous conclusive findings. Additionally, the narrow range of phage activity [3].

It is common to ignore the part that phage therapy plays in phage ecology and evolution, with a focus on interactions between bacteria and phage's. While phage's influence bacterial cooperation, quorum sensing modifies how susceptible bacteria are to them. To maximise the antibacterial effects of phage's, it is advised to carefully examine these interactions few studies have looked at the applicability of in low- and middle-income nations. The authors recommend that the World Health Organization must play a significant role in the implementation of phage therapy. For instance, the WHO's vaccine prequalification programme could help to advance knowledge and the creation of a regulatory framework for phage products [4,5].

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Conclusion

Resistance to antibiotics has contributed to production decline and poses an equal threat to public health. By eradicating pathogens and resulting increase in meat production, bacteriophages have emerged as a successful treatment alternative to the use of antibiotics. To formalise the widespread and cost-effective use of these pages, a lot of research is needed and a variety of products are used in a variety of formats. Applying this innovative technique has significantly reduced economic losses. However, there are some restrictions that need to be considered, including side effects, bacteriophage infection itself, eradicating helpful bacteria and dose standardisation.

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Conflict of Interest

None.

References

1. Beyth, Nurit, Yael Houri-Haddad, Avi Domb and Wahid Khan, et al. "Alternative antimicrobial approach: Nano-antimicrobial materials." Evidence-based complementary and alternative medicine (2015).
2. MacDougall, Conan and Ron E. Polk. "Antimicrobial stewardship programs in health care systems." *Clin Microbiol Rev* 18(2005): 638-656.
3. Harbottle, H., S. Thakur, S. Zhao and D. G. White. "Genetics of antimicrobial resistance." *Anim Biotechnol* 17 (2006): 111-124.
4. Vogelman, Bennett and William A. Craig. "Kinetics of antimicrobial activity." *J Pediatr* 108 (1986): 835-840.
5. Pillai, Satish K., R. C. Moellering and George M. Eliopoulos. "Antimicrobial combinations." Antibiotics in laboratory medicine 5 (2005): 365-440.

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