

The current state of AMR research activities including Alternative to antimicrobials (ATA) and collaboration opportunities in [China]

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Background on AMR research in the [China]

Significant progress has been made on AMR research from animal origin in China.

- China, as the largest developing country in the world, has paid more attention to AMR research and made great contribution to handle AMR/ATA problem in recent years
- Research of policy and action on National Level
 - National action plan for bacterial drug resistance (2016-2020) National bacterial resistance monitoring network (CARRS)
 - Monitoring animal antimicrobial resistance every year
- Under the concept of "One World, One Health"
 - Production mechanism and transmission rules of specific drug-resistance phenotypes of many important pathogens were clarified
 - Comprehensive strategies for prevention and control of drug-resistant pathogens were put forward
- Nationwide monitoring and prevention of drug resistance in animal bacteria jointly carried out by China Institute of Veterinary Drug Control and China Animal Health and Epidemiology Center (CAHEC)
 - CAHEC is responsible for the national risk assessment and epidemiological study of bacteria from animal origin
 - Research on drug resistance mechanism, prevention and control technology and new drug development of animal bacteria have been carried out in scientific research institutions such as China Agricultural University and other institutions

ATA Research Focus

What is the state of research on ATA in your country? e.g., vaccines, phage therapy, antimicrobial peptides
China has issued a number of policies to encourage and support R&D of ATA (including vaccines, bacteriophage therapy, and antimicrobial peptides).

Vaccines: attenuated or inactivated bacteria, genetic engineering recombination, nucleic acids and multivalent vaccines

Phage therapy: the shortage of rapid strain variation, narrow lysis bacteria spectrum, complicated phage screening operation

Antibacteria peptide (AMP): AI and artificial synthesis, high cost of synthesis, the character of easy degradation, the limited useage of antimicrobial peptide in the animal sector.

What are the regulatory or practical barriers to developing ATA-based treatments in China

- Complexity of R&D
- Unstability effect of ATA
- Huge cost of R&D and clinical trials

Challenges related to AMR/ATA research

- Complexity and rapid-spread related to AMR.
- Difficulty of R&D and innovation related to ATA.

Solutions

- New technologies will assist the research and development.
- Action to promote prudent use of veterinary medicine and good animal husbandry.

Collaboration opportunities

Do you have any requests for collaboration with or support from other countries on specific topics?

- Mechanisms research and technological innovation.
- Research on uniform criteria/specification of efficacy assessment and safety related to AMR/ATA.