

# The current state of AMR research activities including Alternative to antimicrobials (ATA) and collaboration opportunities in Thailand



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## Background on AMR research in Thailand

### Current status of AMR research

The research on antimicrobial resistance in Thailand aims to provide academic solutions to address the problem of antimicrobial resistance in the country. This includes surveys on antimicrobial resistance situations, surveillance of antimicrobial use (AMU) and antimicrobial resistance (AMR), studies on the pathways of antimicrobial distribution to gather information on drug usage at different points, as well as the development of alternative substances to replace antibiotics. Ultimately, the goal is to assess the risk of antimicrobial resistance. The research topics involved in various fields are as follows:

- Surveillance of antimicrobial resistance
- Animal health and antimicrobial resistance
- Antimicrobial use and collecting data
- Medicated feed and feed safety
- Veterinary drug regulation
- Risk analysis on AMR
- Veterinary drug residue and food safety

### Key stakeholders on the AMR research

- **Ministry of Agriculture and Cooperatives (MOAC)**
  - Department of Livestock Development (DLD)
  - Department of Fisheries (DOF)
  - Department of Agriculture (DOA)
  - National Bureau of Agricultural Commodity and Food Standard (ACFS)
- **Ministry of Public Health (MOPH)**
  - Thai Food and Drug Administration (Thai FDA)
  - Department of Medical Sciences (DMSC)
  - Department of Disease Control (DDC)
  - International Health Policy Program (IHPP)
- **Ministry of Natural Resources and Environment (MNRE)**
  - Pollution Control Department (PCD)
- **Private Companies and NGO**
- **Veterinary Council of Thailand**
- **Thailand Veterinary Dean Consortium (TVDC)**
- **Thailand One Health University Network (THOHUN)**
- **Agricultural Research Development Agency (ARDA)**
- **World Organisation for Animal Health (WOAH)**
- **Food and Agriculture Organization (FAO)**
- **World Health Organization (WHO)**
- **Associations**
  - Thai Feed Mill Association (TFMA)
  - Animal Health Products Association (AHPA)
- **Academic**
  - Chulalongkorn University
  - Mahidol University
  - Kasetsart University
  - Khon Kaen University
  - Prince of Songkla University

## ATA Research Focus

### The state of research on ATA

### Feed Additive Alternatives

#### Animal Feed Quality Control Act B.E. 2558 (2015)

- Prebiotics
- Probiotics
- Organic acids
- Essential oil compounds
- Nutraceuticals such as Zn and Cu compounds
- Enzyme
- Herbs and plant extracts

Alternative to Antimicrobials (ATA) for promoting animal health are generally considered the feed additive alternatives and regulated under Animal Feed Quality Control Act B.E. 2558 (2015). However, ATA intended to replace antimicrobial drugs must have effective properties for prevention and treatment of diseases and be regulated under the Drug Act B.E. 2510 (1967). Therefore, the production and registration processes must comply with drug regulations, such as requiring manufacturing facilities to be GMP certified and providing efficacy and safety data.

## Challenges related to AMR/ATA research

Challenges	Solutions
Effectiveness of ATA as a Substitute for Antimicrobials.	<ul style="list-style-type: none"> <li>▪ Research on ATA should address key factors such as efficacy and cost-effectiveness to support policy decisions. Currently, ATA remains more expensive than conventional antimicrobials.</li> <li>▪ To ensure the quality and effectiveness of ATA, laboratory capacity must be enhanced to efficiently monitor and assess the active components of ATA. For example, probiotics should not carry antimicrobial resistance genes.</li> </ul>
Development of legislation to support the use of ATA based on scientific evidence obtained from research studies.	<ul style="list-style-type: none"> <li>▪ Enactment of laws or regulations to support the registration and use of a variety of ATA.</li> <li>▪ Strengthening the enforcement of regulations prohibiting the use of growth promoters and reducing the use of medically important antimicrobials reserved for human medicine.</li> </ul>
Promoting ATA Use in Industrial-Scale Production.	<ul style="list-style-type: none"> <li>▪ Government initiatives should encourage and reward producers who adopt ATA in model farms, ensuring high production efficiency, reduced antibiotic use, and support the research study of market channels for product distribution.</li> <li>▪ Establishing public-private partnerships (PPP) to drive ATA adoption in industrial applications.</li> </ul>
Establishing standard guidelines for AMR warning systems to facilitate effective and appropriate risk management of resistant pathogens under the One Health approach.	<ul style="list-style-type: none"> <li>▪ Collaborative global research frameworks should be established in epidemiology, food safety, and microbiology to effectively manage AMR risks under the One Health approach, considering human, animal, and environmental health in context-specific settings.</li> <li>▪ Generating social research to understand behaviors leading to the non-prudent use of antimicrobials, as social research is a critical priority in achieving behavioral changes necessary for the responsible use of antimicrobials.</li> </ul>

## Collaboration opportunities

Collaboration opportunities	Request for collaboration with or support from other countries
Fragmentation of databases on AMR in environmental sector.	<ul style="list-style-type: none"> <li>▪ Push international agencies as UNEP to create a resolution or guideline for monitoring AMR in environment.</li> <li>▪ Integrate cooperation with relevant agencies to participate in research for solving AMR problems in environmental sector.</li> </ul>
Surveillance capacities for AMR require a relatively high investment budget. Government budget is available but fluctuated on a yearly basis.	<ul style="list-style-type: none"> <li>▪ Request funding support from international organization for the technical capacities;                             <ul style="list-style-type: none"> <li>○ Training courses/workshops for enhancing capacity of laboratory staff.</li> <li>○ Conduct proficiency testing (PT) or interlaboratory comparison testing.</li> <li>○ Provide laboratory facilities and infrastructures.</li> </ul> </li> </ul>
Insufficiency of health professionals for AMR management and prevention.	<ul style="list-style-type: none"> <li>▪ Develop educational modules and boost the capacity of various network partners and leaders.</li> <li>▪ Develop teaching and learning capacities for professionals and all sectors related to the rational use of antimicrobials.</li> </ul>
Difficulty to convene multipartner collaborations because of difference background of AMR awareness.	<ul style="list-style-type: none"> <li>▪ Develop key messages, informational media, and communication channels to improve public AMR literacy and awareness.</li> <li>▪ Promote understanding of the prudent use of antimicrobial agents across all sectors while considering animal welfare.</li> </ul>