Meeting Report of the 3rd Global Conference on Foodborne Antimicrobial Resistance

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The Ministry of Food and Drug Safety, headed by Minister Oh Yu-Kyoung, held the 3rd MFDS Global Conference on Foodborne Antimicrobial Resistance (GCFA) in Seoul on September 12 and 13, focusing on "The One Health approach and efforts to tackle AMR". The two-day conference feathred four sessions and 13 lectures, during which opinions and policies were shared by 16 Korean and international experts, including representatives from the World Health Organization (WHO) and European Food Safety Authority (EFSA).

Republic of Korea served as the chair of Codex intergovernmental Task Force on Antimicrobial Resistance (TFAMR). MFDS contributed to make the Codex Text and has held annual GCFA since 2021.

The inaugural GCFA in 2021 emphasized the importance of finalizing international texts on foodborne AMR. The second conference in 2022 aimed to encourage countries to adopt the international texts approved by the 44th Codex Alimentarius Commission and raise awareness about the significance of AMR reduction.

Codex Texts on AMR

- Code of practice to minimize and contain foodborne AMR (COP)
  Addressing the responsible and prudent use of antimicrobial agents by participants in the food chain including competent authorities, manufacturers and veterinarians
- Guidelines on integrated monitoring and surveillance of foodborne AMR (GLIS)
  Covering the design and implementation of integrated monitoring and surveillance programmes for foodborne AMR and antimicrobial use (AMU)

On the first day of the 3rd GCFA, the conference commenced with an opening ceremony, followed by the keynote speech titled "Efforts to Reduce AMR in Animals, Humans, and Food; Korea's Situation" by Emeritus Professor Yong-Ho Park from Seoul National University. Subsequent sessions featured presentations by international organizations and national authorities on their efforts, as well as the current status and strategies for AMR reduction

in food, human health, and the environment. On the second day, sessions delved into the latest technologies for AMR reduction and surveillance, as well as the Korea-funded AMR Codex Texts Project (ACT project), which supports Latin American countries like Bolivia and Colombia and Asian countries such as Mongolia, Nepal, Sri Lanka, and Cambodia, helping them build capacity over five years, starting in 2021, in cooperation with the FAO. The results of the ACT project were also shared.

0. Keynote Speech – Efforts to Reduce Antimicrobial Resistance in Animals, Humans, and Food; Korea's Situation

Yong-Ho Park, Seoul National University, Professor Emeritus

In his keynote speech, Professor Park Yong-Ho of Seoul National University presented Korea's situation and its efforts to combat antimicrobial resistance (AMR) in animals, humans, and food. He emphasized the transmission of AMR from animals to humans and vice versa in many cases, making it challenging to treat foodborne diseases. He stressed the importance of long-term cooperation among not only international organizations but also countries worldwide to reduce AMR. In Korea, various efforts are underway through collaboration with the Ministry of Food and Drug Safety and intergovernmental government agencies to address AMR. Public awareness about the significance of AMR is also crucial.

Session 1. Efforts of international organizations to reduce AMR in the One Health approach (Chair: Prof.Sangryoel Ryu)

1-1. Why Food Matters in Efforts to Control AMR

Markus Lipp, FAO, Senior Food Safety Officer

The Food and Agriculture Organization (FAO) plays a crucial role in promoting food safety and providing scientific advice. The "Quadripartite" alliance, comprising the United Nations (UN), FAO, the UN Environment Programme (UNEP), the World Health Organization (WHO), and the World Organization for Animal Health (WOAH), has signed an MOU to cooperate with a One Health approach to reduce AMR. This approach emphasizes monitoring and establishing a scientific-based monitoring system. All four organizations are working collaboratively to actively monitor AMR. The utilization of cutting-edge technology in AMR analysis can vary based on income and technology levels, highlighting the importance of both technology and crop protection.

1-2 New Revision of the WHO Medically Important Antimicrobial List 2023

Jorge MATHEU ALVAREZ, WHO, Team Lead

WHO conducted the 7th revision of Medically Important Antimicrobial (MIA) List (formerly named Critically Important List). The WHO MIA List is the ranking of the most important antimicrobials for human medicine and helps and supports countries in crafting national policies and guidance for responsible and prudent antimicrobial use across all sectors while improving risk management of AMR and integrated AMR/AMU monitoring and surveillance programs. This list is a pivotal component of the Global Action Plan on

Antimicrobial Resistance. Multisectoral collaboration and One Health approach at national, regional, and global levels is key to implementing this list and preserve antimicrobials.

2–3 The WOAH strategy on Antimicrobial Resistance and responsible use for AMU

Nahoko Ieda, WOAH, AMR Regional Project Officer

Established in 1924, the World Organization for Animal Health (WOAH) is an intergovernmental organization linked to action plans and objectives aimed at reducing antibiotic resistance in alignment with WHO, FAO, and UNEP initiatives. WOAH has been collecting data on antimicrobial use in animals since 2015, which is crucial for reducing medication overuse and misuse and mitigating antimicrobial resistance. The global database ANIMUSE, dedicated to animal antimicrobial use, facilitates access to this vital information. WOAH is committed to promoting responsible antibiotic use through a One Health approach and continues to develop educational materials.

Session 2. Current status and future prospects of AMR mitigation in food, human and environment (Chair: Prof.Seokhoon Jeong)

2–1 AMR–Science to Policy

Shabbir Simjee, Elanco Global, Chief Medical Officer

Despite reductions of AMU in the animal sector AMR continues to rise on the human side. It is suggested that reducing antibiotic use alone may not eliminate resistance; instead, efforts should focus on reducing resistance itself on the human side.

2–2 Addressing Antimicrobial Resistance through One Health: Insights into European Food Safety Authority's Activities

Ernesto Liebana Criado, EFSA, Team Leader Biological Hazards

To monitor AMR, the European Food Safety Authority collects data of humans, food animals and plants, and publishes reports based on this information. The reports show that reducing antibiotic use can ultimately reduce AMR. A One Health approach is emphasized as essential in tackling this issue.

2–3 Korea Foodborne AMR Action Strategies

Sungil Kim, MFDS, Director

In a One Health approach, the Ministry of Food and Drug Safety collaborates with the Ministry of Agriculture, Food and Rural Affairs, the Ministry of Oceans and Fisheries, and the Ministry of Environment to implement policies aimed at reducing AMR. Cooperation among international organizations and national governments is vital for containing AMR. The MFDS monitors bacteria related to AMR in food, while other related ministries monitor their respective domains. The goal is to derive actionable results from the collected data to reduce AMR.

Session 3. Latest technologies for reduction and surveillance of AMR (Chair: Director Soonhan Kim)

3–1 Application of Whole Genome Sequencing for AMR Surveillance

Shaohua Zhao, USFDA, Senior Biomedical Research Scientist

The United States' national AMR monitoring program is known as NARMS (National Antimicrobial Resistance Monitoring System).

NARMS is a collaborative effort between the FDA, CDC, and USDA. These three organizations collectively monitor and surveil AMR in Campylobacter and Salmonella isolated from animals, retail meat, and humans. Since 2015, the FDA has implemented whole genome sequencing (WGS) technology in NARMS. The sequencing technology has indeed revolutionized the field of infectious disease science and holds great potential to streamline the NARMS program's microorganism characterization methods, leading to more efficiency and cost savings in monitoring AMR. This technology allows for in-depth genetic analysis and provides valuable insights into AMR.

3-2 Combating Antimicrobial Resistance: An Overview of Bacteriophage Therapy

Sangryoel Ryu, Seoul National University, Professor

Among the various approaches to reducing AMR, bacteriophage therapy has gained significant attention. Bacteriophages can be categorized into two life cycles: lytic and lysogenic. In the lytic cycle, they enter the host, multiply, kill the host bacteria, and exit, while in the lysogenic cycle, they become integrated into the host bacterium's chromosome. This presentation introduced a study that explores how bacteriophage therapy can minimize antibiotic use by harnessing the unique characteristics of bacteriophages.

3-3 New Technologies for AMR Surveillance

Rene Hendriksen, Denmark Technical University, Professor

There exist various monitoring systems for AMR, but the reliability of the data they produce can be a subject of concern. With the adoption of the latest technology, Whole Genome Sequencing (WGS), data reliability has improved significantly, enabling rapid analysis. It is crucial to investigate how these analytical techniques are linked to AMR. In addition to analyzing and accumulating data with WGS, it is also important to share data with other countries. He said that we must strive to continue to develop even if there are many limitations and challenges.

Session 4. ACT (AMR CODEX Texts) Project by FAO (Chair: Prof.Yongho Park)

4 ACT(AMR CODEX Texts) Project by FAO

FAO representatives introduced FAO's ACT project, which receives funding from the Ministry of Food and Drug Safety, as well as FAO's InFARM initiative. Codex has developed relevant texts to contribute to minimize and contain foodborne AMR. The Objectives of ACT project are to raise awareness on foodborne AMR and Codex texts on AMR and to support integrated monitoring and surveillance system of AMR and AMU in food production. Last of that os to strengthen the capacities to support good practice. With these goals, the ACT project is able to implement the standards that Codex has developed. The presentation also highlighted ACT projects in Asia, Latin America, and the Caribbean.

The MFDS anticipates that the GCFA will play a pivotal role in raising awareness of the imperative need to combat AMR. It also aims to inspire countries to implement internationally agreed-

upon norms, with Korea leading the discussions. The Ministry reiterates its commitment to close collaboration with global communities to minimize and contain foodborne AMR.

식품의약품안전처

The 3rd MFDS GCFA

The 3rd Global Conference on Foodborne Antimicrobial Resistance

September 12(Tue.) ~ 13(Wed.), 2023 **Sofitel Ambassador Seoul**

Programme

Day 1. September 12(Tue.)

Time	Title	Speaker
	Opening Ceremony	
13:00~13:03	Opening Address	Director General of MFDS
13:03~13:08	Welcoming Address	[Video] Minister of MFDS
13:08~13:20	Congratulatory Speech	[Video] Tom Heilandt (Secretary, Codex)
13:20~13:45	[Keynote Speech] Efforts to reduce AMR in Animal, Human and Food	Yong-ho Park (Professor Emeritus, Seoul National University)
	Session 1. Efforts of International Organizations to Reduce AMR in the One Health Approach Chair : Sang-ryoel Ryu (Professor, Seoul National University)	
13:45~14:15	Why Food Matters in Efforts to Control AMR	Markus Lipp (Senior Food Safety Officer, FAO)
14:15~14:45	New Revision of the WHO Medically Important Antimicrobial List 2023	Jorge Matheu Alvarez (Team Lead, WHO)
14:45~15:15	The WOAH Strategy on AMR and Responsible Use for AMU	Nahoko Ieda (AMR Regional Project Officer, WOAH)
15:15~15:40	Break	
	Session 2. Current Status and Strategies of AMR Reduction in Food, Human and Environment Chair : Seok-hoon Jeong (Professor, Yonsei University)	
15:40~16:10	AMR - Science to Policy	[Online] Shabbir Simjee (Chief Medical Officer, Elanco Global)
16:10~16:40	Addressing Antimicrobial Resistance through One Health: Insights into European Food Safety Authority's Activities	Ernesto Liebana (Team Leader Biological Hazards, European Food Safety Authority)
16:40~17:10	Korea Foodborne AMR Action Strategies	Sung-il Kim (Director of Livestock Products Safety Policy Division, MFDS)
17:10~17:40	Summary and Discussion (QnA included)	Chair and Speakers
17:40~17:45	Closing of Day 1	MFDS

Day 2. September 13(Wed.)

Time	Title	Speaker
	Session 3. Latest Technologies for Reduction and Surveillance of AMR Chair : Soon-han Kim (Director of Food Microbiology Division, NIFDS)	
13:00~13:05	Intro of Day 2	MFDS
13:05~13:35	Application of Whole Genome Sequencing for AMR Surveillance	[Online] Shaohua Zhao (Senior Biomedical Research Scientist, FDA)
13:35~14:05	Combating Antimicrobial Resistance: An Overview of Bacteriophage Therapy	Sang-ryoel Ryu (Professor, Seoul National University)
14:05~14:35	New Technologies for AMR Surveillance	Rene Hendriksen (Professor, Technical University of Denmark)
14:35~15:05	Break	
	Session 4. ACT (AMR CODEX Texts) Project by FAO Chair : Yong-ho Park (Professor Emeritus, Seoul National University)	
15:05~15:20	Progress and Challenges of the ACT(Action to Support Implementation of Codex AMR Texts) Project	Myoeng-sin Choi (Food Standard Officer, FAO)
15:20~15:50	The International FAO Antimicrobial Resistance Monitoring (InFARM) System and IT Platform, Supporting Integrated Surveillance in Food and Agriculture Sectors	Alejandro DoradoGarcia (Animal Health Officer, FAO)
15:50~16:10	Supporting the Implementation of Codex Standards through Legislation	[Online] Carmen Bullon (Legal Officer, FAO)
16:10~16:30	Practical Approaches to Eliminate Antimicrobial Use for Growth Promotion and Improve Animal Health through Feeding Practices	Jeffrey Lejeune (Food Safety Officer, FAO)
16:30~17:10	The ACT Project in Asia - What's Happening, The ACT Project in Latin America and the Caribbean	[Online] Peter Flanagan (Regional Project Coordinator, FAO), Maria Gatica (AMR Project Coordinator, FAO)
17:10~17:40	Summary and Discussion (QnA included)	Chair and Speakers
17:40~17:45	Closing	MFDS

The 3rd MFDS GCFA Secretariat

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