



STAR-IDAZ
International Research
Consortium on Animal Health

Report of the workshop on the Americas' Regional perspectives on Alternatives to Antimicrobials (ATA)

August 22, 2023
Quito, Ecuador



Funded by
the European Union

Introduction

The workshop on the Americas' Regional perspectives on Alternatives to Antimicrobials (ATA) took place in Quito, Ecuador, on August 22, 2023. It was organised back-to-back to the Latin American Association of Microbiology Congress (ALAM) 2023 and was a collaborative effort between the STAR-IDAZ Americas Regional Network and the EU project '**Working Together to Fight Antimicrobial Resistance.**'

The EU-Americas project, funded by the European Union, aims to strengthen antimicrobial resistance (AMR) control in the Americas region, with a focus on Argentina, Brazil, Chile, Colombia, Paraguay, Peru, and Uruguay. WOAH together with FAO and PAHO support selected countries to implement their National Action Plans (NAPs), share experiences, advocate for best practices and stimulate collaboration. Component 4 of the project, aims to improve research and innovation through the establishment of international collaborative networks.

STAR-IDAZ International Research Consortium on Animal Health (IRC) is a global initiative to address the coordination of research programmes at international level in the area of animal health and in particular infectious animal diseases including zoonoses (STAR-IDAZ – Global Strategic Alliances for the Coordination of Research on the Major Infectious Diseases of Animals and Zoonoses). It operates in the Americas through a Regional Network that meets regularly to: i) discuss and agree common research priorities in the region; ii) explore opportunities for sharing resources, including access to samples/strains of organisms, specialised facilities and expertise; and iii) identify international funding opportunities.

Fighting AMR by implementing research on ATA is a high priority topic for the STAR-IDAZ IRC, which developed **research roadmaps on ATA**. This workshop aimed to encourage regional and international AMR research coordination and collaboration in the animal health sector to speed up delivery of ATA.

Report of the workshops

The workshop involved participation of 48 attendees from various countries, including Argentina, Brazil, Chile, Colombia, Cuba, Ecuador (the host country), Mexico, Paraguay, Peru, and Uruguay. The attendees represented a diverse group, including WOA National Focal Points for veterinary products, researchers specialising in ATA or AMR, and representatives from Ministries of Science and Agriculture with decision-making authority regarding research funding.

The workshop had several key objectives:

1. Foster international AMR research on ATA
2. Promote coordination and collaboration in the animal health sector in AMR research
3. Networking with regional colleagues and sharing information and lessons learned, particularly on:
 - Countries' AMR research activities
 - Activities of the EU AMR Americas Project
 - Activities of the STAR-IDAZ IRC.

Several notable discussions and presentations took place during the workshop. Leopoldo del Barrio (FAO) emphasised the importance of adopting a One Health multisectoral strategy for mitigating AMR, focusing on challenges related to the development and use of therapeutics and the use of ATA. Responsible antibiotic use and infection prevention were highlighted as priorities. Marcelo Galas (PAHO-WHO) discussed the projected impact of AMR on public health, highlighting that by 2050, 10 million deaths could be attributed to AMR, with significant economic costs. It was noted that 70% of antibiotics are used in livestock production, emphasising the need for action in this sector. Ralf Sudbrak (Global AMR R&D Hub) presented statistics of its global database on AMR research, showing that only 8% of research funding is dedicated to animal health, with 87% allocated to human health. Additionally, research funding dedicated to low- and middle-income countries (LMICs) remains limited. Maria Mesplet (Project Officer of EU-AMR project/WOAH) presented the EU-AMR project, outlining the activities and its four main objectives: i) to support the implementation of national action plans; ii) to strengthen surveillance and monitoring of AMR and antimicrobial use (AMU); iii) to stimulate the private sector to participate in the control of AMR; iv) to promote research and innovation. Ariel Pereda (Chair of STAR-IDAZ Regional Network/INTA) introduced STAR-IDAZ IRC, emphasising the importance of funders and researchers collaborating to prevent duplication of efforts and facilitate research coordination on key priorities, inviting research funders to join forces in the STAR-IDAZ IRC on Animal Health. Each country representative then reported on its country's experiences of research and related activity in fighting AMR. Valeria Mariano (Secretariat of STAR-IDAZ IRC/WOAH) provided an introduction to the World Café workshop and presented the STAR-IDAZ research roadmaps on ATA, available for further consultation on the STAR-IDAZ website.



World café workshop on ATA main regional priorities

During the World Café session of the workshop, participants took part in four discussion tables, sharing their knowledge and experiences in regional challenges and research needs for ATA development and use.

Table 1: Phage technologies

Facilitators: Clarissa Vaz (EMBRAPA, Brasil) and Scarlett Troncoso (COANIQUEN, Chile)

Participants discussed the potential use of phage technologies in animal production and identified concerns about efficacy, regulatory issues, and safety for consumers. Most participants advocated for the use of phages in animal production as feed additives, for food decontamination, and surface sanitisation. However, a common concern was the scarcity of studies demonstrating phages' efficiency for these applications. Regulatory challenges arose due to phages' distinct biological nature compared to traditional antimicrobials, complicating workflows in many South American countries. Additionally, registering phage products for animals has proved challenging in some countries and concerns about consumer perceptions of meat from phage-treated animals also emerged. Participants emphasised the need for more studies to ensure phages' safety for humans. While acknowledging that phages primarily infect bacteria, participants highlighted the importance of assurances that they would not harm human health. Effective communication and awareness campaigns were recommended. Participants noted that phages' high specificity, requiring precise diagnosis for optimal use, was both an advantage and a limitation. Establishing phage banks, addressing intellectual property concerns and maintaining low cost of products were seen as potential drivers for increased phage product availability and affordability for farmers. Some participants believed that phages would complement good farm practices, such as biosecurity procedures, vaccines, and animal health programmes. They also suggested that phages might not replace antibiotics as therapeutics, but could be used preventively or in conjunction with other alternatives like probiotics and organic acids. Expectations for phage use in aquaculture were substantial, and considerations were made for their use in different animal species and the timing of administration.

Table 2: Immunomodulators

Facilitators: Mario Caruffo (University of Chile) & Mariano Fernandez Miyakawa (INTA, Argentina)

In general, there was broad acceptance of immunomodulators as an alternative to antibiotics. Cultural factors played a significant role in this acceptance, as they are perceived as 'natural' molecules (e.g. phytochemicals). The discussion aimed to identify challenges and research needs for developing immunomodulators and categorise them into current challenges and research requirements. Challenges included the region's diversity in terms of species, production conditions, and environmental factors, which made it difficult to develop immunomodulators with broad effects. Participants stressed the importance of tailoring solutions to local needs instead of importing foreign technologies. They advocated for using immunomodulators in combination with other products and animal production systems to achieve synergistic or complementary effects. Some participants highlighted that antibiotic therapies are perceived as more cost-effective and efficient, stressing the need for economic impact studies to raise awareness about the use and efficacy of immunomodulators. To better determine the effects of these products and compare them, participants recommended establishing guidelines for cross-sectional efficacy evaluations and describing their mechanisms of action. The need for networks and collaboration among research groups in the region was emphasised to disseminate research findings effectively. It was mentioned that a significant percentage of the evidence generated in the area remains in undergraduate theses or small research groups without adequate dissemination. Harmonising and standardising registry processes was deemed essential for swift implementation, and the academia was recognised for its role in impartially evaluating immunomodulator efficacy and bridging connections between suppliers and producers.

Table 3: Microbiota optimisation

Facilitators: Martin Fraga (INIA, Uruguay) and Everton Krabbe (EMBRAPA, Brasil)

Discussion on this table underscored the importance of distinguishing between microbiota and microbiome, as they are not synonymous. The first step in implementing microbiota optimisation as an alternative to antimicrobials was defining what constituted a healthy microbiota. This depends on the animal species, target organ, and various management conditions. Participants also explored the utility of microbiota as an indicator for other strategies. To modulate the generic microbiota, participants acknowledged the need to understand and define it. They discussed cases of faecal transplantation, ruminal transplantation as an empirical practice, and strategies for modulating specific microbiotas to achieve desired compositions. Among the modulators identified, probiotics, prebiotics and nutritional management strategies that have an impact on the intestinal microbiota were mentioned. The cost-benefit of immunomodulators and other ATAs was seen as a crucial need. Moreover, participants highlighted the need for specialised laboratories capable of processing samples in a standardised manner and urged the creation of networks of laboratories and researchers to avoid duplication and facilitate standardisation. Capacity for analysing Big data was deemed necessary. As part of an integrated network, it will be necessary to generate a CORE Microbiota for each animal species and for each target organ (intestine, rumen, vagina, etc.). There was also a suggestion to establish a genomic platform for Latin America.

Table 4: Facilitating ATA to market and acceptability of products

Facilitators: Cecile Ploy (JPIAMR) & Efrain Benavides (La Salle University, Colombia)

The objectives of this roundtable were to gather participants' thoughts on barriers to bringing ATA to market and increasing their acceptability to users, including farmers, veterinarians, and consumers. Participants discussed their different experiences of ATA at a national level. They highlighted that the varying applications of ATA based on animal production types, necessitate a holistic approach which is still not envisioned and therefore accepted at local level. The absence of specific economic incentives for ATA and limited public policy support in Latin America are additional limiting factors. There is a need to standardise regulations across countries and secure international economic support for ATA research implementation and use. Some concerns about the unknown impact of some ATA on human and environmental health and the lack of standardised methodologies for assessing efficacy and safety are considered as barriers. The challenge of changing perceptions regarding ATA usage in place of antibiotics could be overcome with the help of cost-benefit analysis and a better understanding of nutrition's role in health promotion, while human and social science research studies could help in identifying barriers and possible solutions to ATA adoption. Global collaboration among universities and research units working on ATA, possibly through a Latin American network, could facilitate ATA to market and acceptability to products.

Conclusion

The pre-congress workshop on ATA in Quito, Ecuador, proved useful for regional and international networking to foster collaboration in addressing AMR in the animal health sector. It facilitated exchange of information and discussions on research priorities and challenges related to phages, immunomodulators, microbiota optimisation, and bringing ATA to market. The workshop underscored the need for further research, cooperation, and coordinated One Health efforts to address these challenges effectively.

Pre-congress workshop on alternatives on antimicrobials

Quito, Ecuador - 22 August 2023

PRELIMINARY AGENDA

Time	Topic	Speaker
8:00-8:30	Registration	
8:30-9:00	Welcome	WOAH FAO PAHO EU Ecuador
9:00-9:30	<ul style="list-style-type: none"> • Presentation of the EU AMR project • PAHO • Antimicrobial Alternative Feeding Practices - • Advances in Policy 	<ul style="list-style-type: none"> • María Mesplet, WOA • Marcelo Galas, PAHO • Leopoldo del Barrio, FAO
9:30-10:30	<ul style="list-style-type: none"> • STAR-IDAZ presentation • Presentation of the Global AMR-R&D Hub project • Presentation of the EU project AVANT 	<ul style="list-style-type: none"> • V. Mariano/A. Pereda, STARIDAZ • Dr. Ralph Sudbrak • Dr. Luca Guardabassi
10:30-11:00	Discussion	
11:00-11:30	Coffee break	
11:30- 13:00	Brief presentation of AMR research projects from each country (STAR-IDAZ RN and AMR project)- Part I	Argentina – Brazil – Chile – Colombia - Cuba
13:00-14:00	Lunch	
14:00- 15:00	Brief presentation of AMR research projects from each country (STAR-IDAZ RN and AMR project)- Part II	Ecuador – México – Paraguay – Perú – Uruguay - CaribVet
15:00- 15:20	Introduction to the STAR-IDAZ ATA roadmaps	Valeria Mariano, WOA-STAR IDAZ
15:20-17:00	World Café discussion (coffee available during the whole session) <ul style="list-style-type: none"> • Introduction • World café discussions on main ATA Regional priorities for research (4 tables: phages, immunomodulators and microbiome, facilitating ATA to market & acceptability) 	All
17:00- 17:45	Plenary discussions on regional priorities for development of ATA	
17:45-18:00	Conclusions	

The event was simultaneously interpreted into English/Spanish.



www.star-idaz.net



 <https://www.linkedin.com/company/star-idaz-irc/>

 <https://twitter.com/Staridaz>



Are you an animal health research funder/programme owner wishing to join the STAR-IDAZ International Research Consortium?

Please contact v.mariano@woah.org for more information