World Organisation for Animal Health

Antonia Ricci - - ITALY

WOAH Reference Laboratory Reports Activities 2024

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LABORATORY INFORMATION

***Name of disease (or topic) for which you are a designated WOAH Reference Laboratory:**	Salmonellosis
***Address of laboratory:**	Viale dell'Università, 10 Legnaro (PD) Italy
***Tel:**	+39-049 8084.296
***E-mail address:**	aricci@izsvenezie.it
Website:	www.izsvenezie.it
***Name (including Title) of Head of Laboratory (Responsible Official):**	Dr Lisa Barco
***Name (including Title and Position) of WOAH Reference Expert:**	Dr Antonia Ricci
***Which of the following defines your laboratory? Check all that apply:**	Governmental

TOR1: DIAGNOSTIC METHODS

1. Did your laboratory perform diagnostic tests for the specified disease/topic for purposes such as disease diagnosis, screening of animals for export, surveillance, etc.? (Not for quality control, proficiency testing or staff training)

Yes

Diagnostic Test	Indicated in WOAH Manual (Yes/No)	Total number of test performed last year	
Indirect diagnostic tests		Nationally	Internationally
0	No	0	0
Direct diagnostic tests		Nationally	Internationally
Serotyping (slide agglutination)	Yes	2729	0
PCR (Salmonella confirmation and serovar detection<9<	Yes	313	0
Geno-serotyping	No	169	

			0
Molecular characterization (MLVA)	No	250	32
Molecular characterization (WGS)	No	321	24
Test for live vaccine Salmonella Typhimurium and Salmonella Enteritidis	No	21	0

TOR2: REFERENCE MATERIAL

2. Did your laboratory produce or supply imported standard reference reagents officially recognised by WOAH?

No

3. Did your laboratory supply standard reference reagents (nonWOAH-approved) and/or other diagnostic reagents to WOAH Members?

No

4. Did your laboratory produce vaccines?

No

5. Did your laboratory supply vaccines to WOAH Members?

No

TOR3: NEW PROCEDURES

6. Did your laboratory develop new diagnostic methods for the designated pathogen or disease?

No

7. Did your laboratory validate diagnostic methods according to WOAH Standards for the designated pathogen or disease?

No

8. Did your laboratory develop new vaccines for the designated pathogen or disease?

No

9. Did your laboratory validate vaccines according to WOAH Standards for the designated pathogen or disease?

No

TOR4: DIAGNOSTIC TESTING FACILITIES

10. Did your laboratory carry out diagnostic testing for other WOAH Members?

Yes

Name of WOAH Member Country seeking assistance	Date	Which diagnostic test used	No. samples received for provision of diagnostic support	No. samples received for provision of confirmatory diagnoses
KOSOVO	2024-02-01	Salmonella molecular characterization (MLVA and WGS)	32	0

11. Did your laboratory provide expert advice in technical consultancies on the request of an WOAH Member?

Yes

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Name of the WOAH Member Country receiving a technical consultancy	Purpose	How the advice was provided
PHILIPPINES	Assistance in sharing information related to Salmonella isolation and identification methods	Remote e-mail
NIGERIA	Assistance in preparation of a scientific paper (published - DOI: 10.3390/microorganisms12081529)	Remote e-mail
VIETNAM	Assistance in sharing information related to protocols for the detection of Salmonella in food through real-time PCR	Remote e-mail
VIETNAM	Assistance in sharing information related to protocols for the detection of Salmonella in food through real-time PCR	Remote e-mail

TOR5: COLLABORATIVE SCIENTIFIC AND TECHNICAL STUDIES

12. Did your laboratory participate in international scientific studies in collaboration with WOAH Members other than the own?

Yes

Title of the study	Duration	Purpose of the study	Partners (Institutions)	WOAH Member Countries involved other than your country
DISCONTOOL PROJECT	12	The aim of the project is to provide a mechanism for focusing and prioritising research that ultimately delivers new and improved vaccines, pharmaceuticals and diagnostic tests in relation to Salmonella and other animal diseases	Animal and Plant Agency, United Kingdom - BfR, Germany - Danish Agriculture and Food Council/University of Copenhagen, Denmark - ANSES, France – IZSVenezie, Italy	GERMANY

13. In exercising your activities, have you identified any regulatory research needs* relevant for WOAH?

No

TOR6: EPIZOOLOGICAL DATA

14. Did your Laboratory collect epidemiological data relevant to international disease control?

Yes

If the answer is yes, please provide details of the data collected:
The laboratory collects data about Salmonella strains isolated from samples related to veterinary sector (isolated from feed, food and animals) at national level. These data are available for surveillance purposes at national and international level.

15. Did your laboratory disseminate epidemiological data that had been processed and analysed?

Yes

If the answer is yes, please provide details of the data collected:

Experts of the WOAH laboratory contributed to the collection and analyses of Salmonella data for The European Union One Health 2023 Zoonoses Report (https://efsa.onlinelibrary.wiley.com/doi/epdf/10.2903/j.efsa.2024.9106).

16. What method of dissemination of information is most often used by your laboratory? (Indicate in the appropriate box the number by category and list the details in the box)

a) Articles published in peer-reviewed journals:

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Cota, Joao B.; Langkabel, Nina; Barco, Lisa; Olsen, Abbey; Bonardi, Silvia; Vieira-Pinto, Madalena; Roasto, Mati; Huneau-Salauen, Adeline; Sandberg, Marianne; Alvseike, Ole; Kautto, Arja H.; Blagojevic, Bojan; Majewski, Micha l; Laukkanen-Ninios, Riikka; Nagel-Alne, Gunvor Elise; Le Bouquin-Leneveu, Sophie; Fredriksson-Ahomaa, Maria; Kaukonen, Eija - Comparison of european surveillance and control programs for Salmonella in broiler and Turkey chains. Food Control 2024, 165, pp.110656 10.1016/j.foodcont.2024.110656

Cento G., Mancin M., Cibin V., Villa L., Ricci A., Ciot L., Fabbri G., Sardella A., Losasso C., Barco L. Application of the EFSA Source Attribution Model (SAM) to compare the main sources of human salmonellosis in Italy related to the national production over the period 2018–2020. Food Control 2024, 160 https://doi.org/10.1016/j.foodcont.2024.110315

- *Olsen J.E., Frees D., Kyvsgaard N.C., Barco L. Lack of correlation between growth, stress, and virulence phenotypes in strains of Salmonella enterica serovar Enteritidis, S. Typhimurium DT104, S. 4,12, b:- and S. Liverpool. Lett.Appl.Microbiol. 2024 Feb 1;77(2) DOI: 10.1093/lambio/ovae015*
- *Petrin S., Tiengo A., Longo A., Furlan M., Marafin E., Zavagnin P., Orsini M., Losasso C., Barco L. Uncommon Salmonella Infantis Variants with Incomplete Antigenic Formula in the Poultry Food Chain, Italy. Emerg.Infect.Dis. 2024 30(4):795–799. DOI: 10.3201/eid3004.231074*

Sati N.M., Card R.M., Barco L., Muhammad M., Luka P.D., Chisnall T., Fagbamila I.O., Cento G., Nnadi N.E., Kankya C., Rwego I.B., Ikwap K., Mugisha L., Erume J., Mwiine F.N. (2024) Antimicrobial Resistance and Phylogenetic Relatedness of Salmonella Serovars in Indigenous Poultry and Their Drinking Water Sources in North Central Nigeria. Microorganisms, 2024, 12(8):1529. doi: 10.3390/microorganisms12081529.

Marzoli, Filippo; Bertola, Michela; Fazion, Juliane Pinarelli; Cento, Giulia; Antonelli, Pietro; Dolzan, Beatrice; Barco, Lisa; Belluco, Simone. A systematic review on the occurrence of Salmonella in farmed Tenebrio molitor and Acheta domesticus or their derived products. INTERNATIONAL JOURNAL OF FOOD MICROBIOLOGY, 2024 doi.org/10.1016/j.ijfoodmicro.2023.110464

b) International conferences:

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Boscolo Anzoletti A., Mancin M. (2024) "Machine Learning Models for source attribution of Salmonella strains isolated from humans" In EAVLD 2024, 7th Congress of the European Association of Veterinary Laboratory Diagnosticians. Padua, Italy, 21-23/10/2024. (poster)
Cento G., Saccardin C., Mancin M., Barco L. "Salmonella proficiency tests, the experience of the Italian National Reference Laboratory" In EAVLD 2024, 7th Congress of the European Association of Veterinary Laboratory Diagnosticians. Padua, Italy, 21-23/10/2024. (oral presentation)

Bevilacqua A., Trevisan R., Loriggiola F., Favretti M., Barco L. "Istituto Zooprofilattico Sperimentale delle Venezie - Proficiency testing (PT) AQUA on Food Microbiology : 20 years of expericence" In EAVLD 2024, 7th Congress of the European Association of Veterinary Laboratory Diagnosticians. Padua, Italy, 21-23/10/2024. (poster)

c) National conferences:

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Bortolami L., Pezzuto A., Piovesana A., Furlan F., Massaro A., Mancin M., Boscolo A., Cento G., Cereser A., Zampiero A., Barco L., "Experimental evaluation of the effectiveness of various cooking methods and reduction of Salmonella risk associated with the consumption of fresh poultry meat and poultry meat preparations " XXXIII National Meeting on Food Safety (AIVI), 11-13 September 2024,
Barco L., Saccardin C., Petrin S., Salaris S., Cibin V., various oral communications about updates of epidemiological data of Salmonella at national and European level, analytical methods and research activities VIII Annual Meeting Enter-Vet network laboratories, Legnaro, Padova, 16-17 December, 2024
Barco L., National Control Program for feed in relation to Salmonella, Torino, 18 October, 2024
Barco L."Evalution of Salmonella prevalence in the European and national setting", Challenges and Opportunity of the Italian poultry sector, Catania 5 April, 2024

d) Other (Provide website address or link to appropriate information):

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www.izsvenezie.it

TOR7: SCIENTIFIC AND TECHNICAL TRAINING

17. Did your laboratory provide scientific and technical training to laboratory personnel from other WOAH Members?

No

TOR8: QUALITY ASSURANCE

18. Does your laboratory have a Quality Management System?

Yes

Quality management system adopted	Certificate scan (PDF, JPG, PNG format)	
ISO 17025	pdf certificate	17025_Certificate.pdf
ISO 17043	pdf certificate	17043_Certificate.pdf

19. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
Isolation and identification of Salmonella in food, feed and samples collected at primary production level	Accredia, Italian Accreditation Body
Serotyping of Salmonella strains	Accredia, Italian Accreditation Body
Molecular serotyping of Salmonella strains	Accredia, Italian Accreditation Body

PCR to differentiate S. Typhimurium and its monophasic variants	Accredia, Italian Accreditation Body
Real Time PCR for Salmonella detection in food and feed samples	Accredia, Italian Accreditation Body
Identification of vaccinal strains of S. Enteritidis	Accredia, Italian Accreditation Body
Whole Genome Sequencing and cluster analyses	Accredia, Italian Accreditation Body
MLVA for S. Enteritidis and S. Typhimurium	Accredia, Italian Accreditation Body
Proficiency tests (Salmonella isolation and serotyping)	Accredia, Italian Accreditation Body

20. Does your laboratory maintain a "biorisk management system" for the pathogen and the disease concerned?

Yes

The laboratory has in place a management system that ensures safe and secure handling and storage of Salmonella isolates. This is the basis for protecting laboratory employees and preventing the spread of Salmonella strains outside the laboratory. The management system in place guarantees laboratory biosafety and biosecurity. Furthermore, an internal audit related to the verification of biosafety and biosecurity practices currently in use is organized annually, as well as for traceability, storage of isolates and operational flow.

TOR9: SCIENTIFIC MEETINGS

21. Did your laboratory organise scientific meetings related to the pathogen in question on behalf of WOAH?

No

22. Did your laboratory participate in scientific meetings related to the pathogen in question on behalf of WOAH?

No

TOR10: NETWORK WITH WOAH REFERENCE LABORATORIES

23. Did your laboratory exchange information with other WOAH Reference Laboratories designated for the same pathogen or disease?

Yes

24. Do you network (collaborate or share information) with other WOAH Reference Laboratories designated for the same pathogen?

No

25. Did you organise or participate in inter-laboratory proficiency tests with WOAH Reference Laboratories designated for the same pathogen during the past 2 years?

Yes

Purpose of the proficiency test:	Role of your Reference Laboratory (organiser/ participant)	No. participating Laboratories	Participating WOAH Ref. Labs/ organising WOAH Ref Lab
Quality control assurance – detection of Salmonella in fabric swab samples _EUROPEAN REFERENCE LABORATORY	Participant	66	Germany, UK
Quality control assurance – Salmonella serotyping_ EUROPEAN REFERENCE LABORATORY	Participant	not available	Germany, UK
Quality control assurance – Salmonella WGS – cluster	Participant	not available	Germany, UK

analyses_ EUROPEAN REFERENCE LABORATORY			

26. Did your laboratory collaborate with other WOAH Reference Laboratories for the same disease on scientific research projects for the diagnosis or control of the pathogen of interest?

No

TOR11: OTHER INTERLABORATORY PROFICIENCY TESTING

27. Did your laboratory organise or participate in inter-laboratory proficiency tests with laboratories other than WOAH Reference Laboratories for the same pathogen during the past 2 years?

Yes

Purpose for inter-laboratory test comparisons1	Role of your reference laboratory (organizer/participant)	No. participating laboratories	Name of the test	WOAH Member Countries
Quality control assurance – Salmonella detection from samples collected at primary production level	Organizer	70	Salmonella isolation	ITALY,
Quality control assurance – Salmonella serotyping	Organizer	12	Salmonella serotyping	ITALY,

TOR12: EXPERT CONSULTANTS

28. Did your laboratory place expert consultants at the disposal of WOAH?

29. Additional comments regarding your report:

Yes

The main activities of the WOAH reference laboratory are the identification and characterisation of Salmonella isolates from different sources including diagnostic samples from different animal species, (primary production samples), feed, food, and environment, using bacteriological, serological, and molecular biological approaches. The WOAH reference laboratory works mainly with samples collected along the poultry chain. In the framework of this expertise the WOAH reference laboratory can provide any scientific and technical support to other laboratories.