World Organisation for Animal Health

Abdelsatar Arafa - - EGYPT

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:**	Avian influenza
***Address of laboratory:**	Reference Laboratory for Veterinary Quality Control on Poultry Production RLQP, Animal Health Research Institute AHRI, Agriculture research Centre ARC, Ministry of Agriculture and Land Reclamation 7 Nadi el Seidst.Dokki Giza EGYPT
***Tel:**	+202-33 37.09.58
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Website:	www.ahri.gov.eg
***Name (including Title) of Head of Laboratory (Responsible Official):**	Samah Eid, Director of AHRI, ARC, Egypt
***Name (including Title and Position) of WOAH Reference Expert:**	Abdelsatar Arafa, Cheif Researcher of Poultry diseases, WOAH avian influenza Expert, RLQP, AHRI, ARC, Egypt
***Which of the following defines your laboratory? Check all that apply:**	Governmental Research agency

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
Haemoagglutination inhibition (H5)	Yes	25670	0
Haemoagglutination inhibition (H9)	Yes	1672	0

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Direct diagnostic tests		Nationally	Internationally
real-time RT-PCR	Yes	11467	0
Virus isolation	Yes	132	0
Sequencing of HA gene	Yes	25	0
Sequencing of NA gene	Yes	6	0
WGS - Whole Genome Sequencing	Yes	1	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?

Yes

Type of reagent available	Related diagnostic test	Produced/ provide	Amount supplied nationally (ml, mg)	Amount supplied internationally (ml, mg)	No. of recipient WOAH Member Countries	Country of recipients
H9N2 antigen	real-time RT-PCR	RLQP-AHRI-Egypt	7 mL	1 mL	1	EGYPT, SYRIA,
H5N8 Virus	virus isolation	RLQP-AHRI-Egypt	70 mL	1	1	EGYPT,
H5N1 Virus	virus isolation	RLQP-AHRI-Egypt	70 mL	1	1	EGYPT,
H9N2 virus	virus isolation	RLQP-AHRI-Egypt	40 mL	1	1	EGYPT,

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?

Yes

Name of the new test or diagnostic method developed	Description and References (Publication, website, etc.)
Hemagglutination Inhibition H5	A Novel Application of Virus Like Particles in the Hemagglutination Inhibition Assay. Int J Mol Sci. 2024 Aug 11;25(16):8746. doi: 10.3390/ijms25168746. PMID: 39201433; PMCID: PMC11354378.

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?

Yes

Name of the new vaccine developed	Description and References (Publication, website, etc)
monovalent inactivated oil-emulsion vaccine containing a reassortant virus with HA gene of the Chicken/ME-2018/H5N8 strain and a bivalent vaccine containing same reassortant virus plus a previously generated reassortant H5N1 strain (CK/Eg/RG-173CAL/17).	A single dose of inactivated oil-emulsion bivalent H5N8/H5N1 vaccine protects chickens against the lethal challenge of both highly pathogenic avian influenza viruses, Comparative Immunology, Microbiology and Infectious Diseases, Volume 74, 2021, 101601, ISSN 0147-9571, https://doi.org/10.1016/j.cimid.2020.101601.
A monovalent experimental vaccine against HPAI H5N8 clade 2.3.4.4b using 2 adjuvants (MONTANIDE™ GEL 01 PR, MON-TANIDE™ IMS 1313, and MONTANIDE™ ISA70	Assessment of Inactivated H5N8 Avian Influenza Vaccine Using Multiple Mucosal Adjuvants in Different Ways. Advances in Animal and Veterinary Sciences. 12. 10.17582/journal.aavs/2024/12.s1.37.48

TOR4: DIAGNOSTIC TESTING FACILITIES

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

No

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

Yes

Name of the WOAH Member Country receiving a technical consultancy	Purpose	How the advice was provided
SAUDI ARABIA	Requirements for WOAH Reference Lab. application.	Electronic social media

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
Genetic features of avian influenza (A/H5N8) clade 2.3.4.4b isolated from quail in Egypt	2 years	To provide genetic characterization of the full genome of HPAI H5N8 isolated from quail in Egypt.	Uppsala University, Sweden; University of Liverpool, UK	SWEDEN UNITED KINGDOM
A Novel Application of Virus Like Particles in the Hemagglutination Inhibition Assay	2 years	To investigate the novel use of virus like particles (VLP) as an antigen for the HI assay. VLPs were prepared from H5N1 strain using a baculovirus expression system.	Medigen, Inc., MD, USA.	UNITED STATES OF AMERICA
The influence of Spirulina			Princess Nourah bint	

extract on pathogenicity, immune response, and vaccine efficacy against H9N2 avian influenza virus in specific pathogen free chickens	2 years	To examine varying doses of the cyanobacterium Spirulina extract on the effectiveness of H9N2 vaccine	Abdulrahman University, Saudi Arabia; King Khalid University, Saudi Arabia; United Arab Emirates University, United Arab Emirates.	SAUDI ARABIA UNITED ARAB EMIRATES
The therapeutic efficacy of neem (Azadirecta indica) leaf extract against coinfection with Chlamydophila psittaci and low pathogenic avian influenza virus H9N2 in broiler chickens,	2 years	To examine the pathogenicity of Chlamydophila psittaci, and LPAIV H9N2 individually and in combination in broiler chickens, as well as to determine whether or not aqueous neem (Azadirachta indica) leaf extract is effective against infections caused by these pathogens.	Princess Nourah bint Abdulrahman University, Saudi Arabia; King Khalid University, Saudi Arabia; King Abdulaziz University, Saudi Arabia; United Arab Emirates University, United Arab Emirates	SAUDI ARABIA UNITED ARAB EMIRATES

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

Yes

Research need : 1

Please type the Research need: wild birds and animals surveillance

Relevance for WOAH Disease Control, Standard Setting,

Relevance for the Code or Manual Manual,

Field Epidemiology and Surveillance,

Animal Category Terrestrial,

Disease:

Avian influenza

Kind of disease (Zoonosis, Transboundary diseases) Zoonosis, Transboundary diseases,

If any, please specify relevance for Codes or Manual, chapter and title

(e.g. Terrestrial Manual Chapter 2.3.5 - Minimum requirements for aseptic production in vaccine manufacture)

Answer: CHAPTER 3.3.4. AVIAN INFLUENZA (INCLUDING INFECTION WITH HIGH PATHOGENICITY AVIAN INFLUENZA VIRUSES)

Notes:

Answer: Study the Epidemiology of avian influenza viruses in wild birds and animals

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:
National surveillance data were collected to enhance the detection and molecular analysis of viruses circulating in different hosts.

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:
The Egyptian Ministry of Agriculture has a national surveillance program to detect avian influenza viruses in domestic birds and commercial poultry farms. The Reference Laboratory conducts research with the National and international research institutes and Universities to study avian influenza virus in poultry. Epidemiological reports to the General Organization of Veterinary Services GOVS, Ministry of Agriculture, Ministry of Health and FAO. OFFLU VCM network: for identification of animal and avian influenza viruses with zoonotic potential, to select human vaccines against zoonotic or pandemic influenza viruses from animal source. RLQP provided HA and NA sequences from AI viruses of the H5 subtypes and H9 subtype. Meetings and seminars related to AI about the epizootiogical information and disease recording, characteristics of circulating viruses and laboratory methods; and research programs that maintain information exchange with the WOAH RL for AI, the FAO, and the WHO.

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:

2

Mohamed H. Elhusseiny, Moataz M. Elsayed, Wesam H. Mady, Osama Mahana, Neveen R. Bakry, Ola Abdelaziz, Abdel-Sattar Arafa, Momtaz A. Shahein, Samah Eid, Mahmoud M. Naguib. Genetic features of avian influenza (A/H5N8) clade 2.3.4.4b isolated from quail in Egypt. Virus Research, Volume 350, 2024, 199482,
https://doi.org/10.1016/j.virusres.2024.199482.

Yehia, N., Mohamed, R.I. Genetic Evolution Correlated with Pathogenicity of H9N2 Circulated in Lower Egypt during 2022. Advances in Animal and Veterinary SciencesThis link is disabled., 2024, 12(Specialissue1), pp. 232–244

b) International conferences:

0

c) National conferences:

1

Prevention and Control Technologies for New-Emerging and Re-Emerging Significant Infectious Animal Diseases. organized by Animal Health Research Institute, Agriculture Research Center and Faculty of Veterinary Medicine, Cario University, Egypt and Harbin Veterinary Research Institute, Chinese Academy of Agricultural Science, China

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

0

TOR7: SCIENTIFIC AND TECHNICAL TRAINING

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

Yes

a) Technical visit : 0

b) Seminars : 0

c) Hands-on training courses: 3

d) Internships (>1 month) 0

Type of technical training provided (a, b, c or d)	Country of origin of the expert(s) provided with training	No. participants from the corresponding country
C	IRAQ	3

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	Certifcate-ISO.pdf	ISO-Cert.RLQP.pdf

19. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
Detection of subtype-specific antibodies to Avian influenza virus by haemagglutination inhibition test	Egyptian Accreditation Council EGAC
Isolation and characterization of Avian influenza viruses using SPF embryonated chicken eggs and haemagglutination inhibition test	Egyptian Accreditation Council EGAC
Detection of AI virus (M, H5,H9) by Real Time PCR	Egyptian Accreditation Council EGAC
Sequencing of nucleotides of avian influenza virus (AIV)	Egyptian Accreditation Council EGAC

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

Yes

Biological risk analysis includes identification of biohazards, a laboratory assessment followed by management of the associated biological risks, and biological risk communication. RLQP performs risk assessments to identify the biosafety and biosecurity measures needed to safely implement work with avian influenza RLQP biological risk management system includes the Biosafety manual including policies, procedures (procedure No.22 for Biosafety), and operational components needed for identifying, determining the extent of, managing, and communicating disease and economic risks associated with a specific biological agent in the context of how that agent is handled, manipulated, and maintained in the laboratory.

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?

Yes

Title of event	Date	location	Role (speaker, presenting poster, short communications)	Title of the work presented
Regional Coordination meeting on HPAI situation in the Middle East and action plans guided by Global HPAI Strategy	2024-12-16	Jordan	Speaker	Current Situation of HPAI in The Middle East Update from the WOAH HPAI reference laboratory
OFFLU avian influenza teleconference	2024-12-11	Rome, virtual	Speaker	share epidemiological and genetic information
OFFLU Global Technical Meeting	2024-07-01	Rome, virtual	Speaker	Current situation/Risk assessment update
Update of the Avian Influenza situation of in Cattle and humans	2024-11-21	Buenos Aires, virtual	Attendant	

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?

Yes

NETWORK/DISEASE	ROLE OF YOUR LABORATORY (PARTICIPANT, ORGANISER, ETC)	NO. PARTICIPANTS	PARTICIPATING WOAH REF. LABS
OFFLU/avian influenza	Participant	45	ALL avian influenza Ref Labs,

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

	Role of your Reference		Participating WOAH Ref. Labs/

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Purpose of the proficiency test:	Laboratory (organiser/ participant)	No. participating Laboratories	organising WOAH Ref Lab
OFFLU/avian influenza	Participant	34	Organized by APHA Ref. Lab. UK
OFFLU/PT Program Influenza A virus PCR	Participant	11	Organized by CSIRO, Australia

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?

Yes

Title of the project or contract	Scope	Name(s) of relevant WOAH Reference Laboratories
Memorandum of Understanding for Cooperation in the Field of Preventive Veterinary Medicine with Harbin Veterinary Research Institute	Avian influenza viruses, other avian and animal viruses	Harbin Veterinary Research Institute of the Chinese Academy of Agricultural Sciences of the People's Republic of China

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?

No

not yet

TOR12: EXPERT CONSULTANTS

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

No

29. Additional comments regarding your report:

Yes

Long-term security approval procedures and requirements hinder the activity of receiving samples and trainees from international WOAH members.