WOAH Reference Laboratory Reports Activities 2022

Activities in 2022

This report has been submitted : 2 mai 2023 10:23

Laboratory Information

Name of disease (or topic) for which you are a designated WOAH Reference Laboratory:	Avian influenza
Address of laboratory:	Animal and plant quarantine Agency, Ministry of Agriculture, Forest and Rural Affairs
Tel.:	(82) 54-912-0963
E-mail address:	leeyj700@korea.kr
Website:	http://www.qia.go.kr
Name (including Title) of Head of Laboratory (Responsible Official):	Bong Kyun Park (Commissioner, APQA)
Name (including Title and Position) of WOAH Reference Expert:	Dr. Youn-Jeong Lee, Director of Avian Influenza Research and Diagnostic Division(ARDD)
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
C-ELISA (AI type A)	Yes	215	0
HI (H5/H7)	Yes	2,894	0
Direct diagnostic tests		Nationally	Internationally
Virus isolation	Yes	517	74
rRT-PCR/RT-PCR	Yes	14,016	25

H5/H7 pathotyping by Sanger sequencing	Yes	72	0
Next Generation Sequencing for AIV gene	Yes	392	94

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
Penside Kit	AI NP antigen detction	provide		150 Test	1	Asia and Pacific
Antigen (H5, H7, H9) Antiserum (H5, H7, H9)	HI test	Produce/Provide	150,000 test		38 (provincial veterinary service laboratories, ROK)	Asia and Pacific

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

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

Yes

NAME OF THE NEW TEST OR DIAGNOSTIC METHOD DEVELOPED	DESCRIPTION AND REFERENCES (PUBLICATION, WEBSITE, ETC.)
novel rRT-PCR method that can detect avian influenza virus of subtype H9 in subtype specific manner, validated according to WOAH standards	Patent application No. : KR-10-2022-0056797(2022.5.9.)

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

Yes

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.)
rgH526 HPAI vaccine (H5N1/clade 2.3.4.4b)	The rgH526 vaccine strain (H5N1/clade 2.3.4.4b) was newly developed by reverse genetics for emergency preparedness in Korea (Patent application No. : KR-10-2022-0153076)

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
MONGOLIA	2022-10-01	Real-time RT-PCR, NGS	0	41
LAOS	2022-09-01	NGS	0	32
CAMBODIA	2022-09-08	NGS	0	11
VIETNAM	2022-09-12	NGS	0	32

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
INDIA	To share the current situation of H9N2 vaccination and vaccine information of Korea	Brief introduction and explanation was given to them in document via 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
The monitoring and characteristic studies for avian influenza and foot and mouth disease viruses in Vietnam	10 years ('15-'24)	Monitoring of highly pathogenic avian influenza in Vietnam	National Center for Veterinary Diagnosis	VIETNAM
Studies on genetic characterization of foot and mouth disease viruses and avian influenza virus in FMD and AI endemic countries (Cambodia and LAO PDR)	5 years ('18-'22)	Monitoring of highly pathogenic avian influenza in Cambodia and LAO PDR	National Animal Health and Production Reseach Institute (Cambodia) National Animal Health Laboratory (Lao PDR)	LAOS
The monitoring and characteristic studies for Avian Influenza viruses in migratory habitats of Mongolia	5 years ('21-'25)	Monitoring of highly pathogenic avian influenza in Mongolia	Mongolian University of Life Sciences(MULS)	MONGOLIA

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:

- (HPAI outbreaks) The information on the isolated viruses of avian influenza, e.g. origin, subtype, pathotype or nucleotide sequences, for the molecular epidemiological studies on the outbreaks of HPAI in Vietnam, Cambodia, LAO PDR and Mongolia.
- (Migratory birds) The information on the avian influenza viruses isolated from the migratory birds from active surveillance in Mongolia e.g. origin, subtype, pathotype or nucleotide sequences, for the molecular epidemiological studies and providing early warning for the disease control in poultry

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 publication of the studies about molecular epidemiological characterization of avian influenza viruses isolated from wild birds or poultry in South Korea and other countries.

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:

6

1. Baek YG, Lee YN, Park YR, Chung DH, Kwon JH, Si YJ, Heo GB, Lee YJ, Lee DH, Lee EK. Evolution, Transmission, and Pathogenicity of High Pathogenicity Avian Influenza Virus A (H5N8) Clade 2.3.4.4, South Korea, 2014–2016. Front. Vet. Sci. 2022. Jun 21;9;906944

2. Sagong M, Lee YN, Song S, Cha RM, Lee EK, Kang YM, Cho HK, Kang HM, Lee YJ, Lee KN. Emergence of clade 2.3.4.4b novel reassortant H5N1 high pathogenicity avian influenza virus in South Korea during late 2021. Transbound. Emerg. Dis. 2022 Sep;69(5):e3255-e3260.

3. Kang YM, Cho HK, An SJ, Kim HJ, Lee YJ, Kang HM. Updating the national antigen bank in Korea:Protective efficacy of synthetic vaccine candidates against H5Nx high pathogenicity avian influenza viruses belonging to clades 2.3.2.1 and 2.3.4.4 Vaccines(Basel). 2022 Nov. 3;10(11):1860.

4. Sagong M, Lee KN, Lee EK, Kang HM, Choi YK, Lee YJ. Current situation and control strategies of H9N2 avian influenza in South Korea. J. Vet. Sci. 2022 Dec. 24(1):e5.

5. Kim NY, Lee KN, Sagong MG, Heo GB, Lee YJ. Development and validation of concentration methods for sensitive detection of avian influenza virus in environmental water. The Korean Society of Prev. Vet. Med. 2022 Dec. 46(4) 189-194.

6. Yoo DS, Kang SI, Lee YN, Lee EK, Kim WY, Lee YJ. Bridging the local persistence and long-range dispersal of Highly Pathogenic Avian Influenza virus(HPIAv) : A case study of HPAIv infected sedentary and migratory wildfowls inhibiting around infected premises. Viruses. 2022. Jan. 10;14(1):116.

b) International conferences:

3
1. Pathogenesis of clade 2.3.4.4b H5N8 High pathogenicity avian influenza virus isolated from South Korea in 2020-2021(Option, 2022.9.28.)
2. Genetic and pathogenic characterization of High Pathogenicity Avian Influenza virus A(H5N8) clade 2,3,4,4, South Korea, 2014-2016(Option, 2022.9.28.)
3. Outbreak situation and characterization of LPAI H9N2(Y280).(WOAH, 2022.04.21.)

c) National conferences:

11
1. AI symphosium at APQA, Korea(2022.9.15.)
2. Recent high pathogenicity avian influenza outbreaks: global perspective(The Korean society for zoonoses, 2022.5.17)
3. The development of LPAI H9N2(Y280) vaccine.(Korean Association of Poultry Veterinarians, 2022.06.15.)
4. Validation and comparison of virus concentration methods for viral surveillance on the environmental water(The Korean society for zoonoses., 2022.10.6.)
5. Genetic characterization of high pathogenicity avian influenza virus in Vietnam during 2020-2021(The microbiology society of Korea, 2022.10.31.)
6. Phylogenetic analysis of H5N1 high pathogenicity avian influenza vrius isolated in Laos, 2019-2020(The microbiology society of Korea, 2022.10.31.)
7. In vitro properties of H5 high pathogenicity avian influenza viruses in chicken cell line (The Korean Society of Vet, Sci., 2022.11.17.)
8. Pathogenicity of Y280 lineage H9N2 low pathogenic avian influenza in SPF chickens, Korean native chickens, and ducks (The Korean Society of Vet, Sci., 2022.11.17.)
9. Genetic characterization of H5 low pathogenicity avian influenza virus in Korea during 2018-2021 (The Korean Society of Vet, Sci., 2022.11.17.)
10. Genetic characterization of H3N8 and H4N6 avian influenza viruses isolated from wild bird in Mongolia, 2021 (The Korean Society of Vet, Sci., 2022.11.17.)
11. Development of new H10 subtype specific RT-PCR detection newly isolated avian influenza virus of subtype H10 from wild bird virological surveillance from 2021(The Korean Society of Vet, Sci., 2022.11.17.)

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

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 :

b) Seminars : 18 persons in the 9th workshop on diagnosis of animal disease supported by WOAH reference laboratories of APQA, Korea. (2022.10.18-19)

c) Hands-on training courses:

d) Internships (>1 month)

Type of technical training	Country of origin of the expert(s)	No. participants from the

provided (a, b, c or d)	provided with training	corresponding country
B	4	18

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	Certificate (PDF)	20230203_KT372_Animal_and_Plant_Quarantine_Agency(Department_of_Animal_and_Plant_Health_Research)_P (1).pdf

19. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
Identification of the agent(molecular techiniques)	KOLAS-Korea Laboratory Accrediation Scheme
Serological test(HA and HI)	KOLAS-Korea Laboratory Accrediation Scheme

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

Yes

A national biorisk management is designated to prevent disease among personnel and to protect the community from harm by preventing the release of infectious pathogen. In order to maintain the biorisk capacity of containment facilities in Korea, the national approval and management system for these facilities, such as Biosafety Level 3(BL3) facilities. Accredtion No. : KCDC-HP-16-3-03, KCDC 16-3-03.

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 (mm/yy)	Location	Role (speaker, presenting poster, short communications)	Title of the work presented
Vaccination Strategies to prevent and control HPAI: Removing unnecessary barriers for usage	2022-10-25	Paris, France	SPEAKER	VACCINATION IN PLACES WHERE VIRUS IS ENDEMIC: Egypt Practice to control HPAI

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. Are you a member of a network of WOAH Reference Laboratories designated for the same pathogen?

Yes

PURPOSE OF THE PROFICIENCY TESTS: 1	ROLE OF YOUR REFERENCE LABORATORY (ORGANISER/ PARTICIPANT)	NO. PARTICIPANTS	PARTICIPATING WOAH REF. LABS/ ORGANISING WOAH REF. LAB.

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

Yes

PURPOSE OF THE PROFICIENCY TESTS: 1	ROLE OF YOUR REFERENCE LABORATORY (ORGANISER/ PARTICIPANT)	NO. PARTICIPANTS	PARTICIPATING WOAH REF. LABS/ ORGANISING WOAH REF. LAB.
RL RING TRIAL, 2021	participant		Animal and Plant Health Agency Weybridge (UK) (organizer)
PT for the Diagnosis of AIV & APMV-1-2021	participant		OIE Reference Laboratory for Avian Influenza disease Istituto Zooprofilattico Sperimentale delle Venezie (IZSVe)- Italy

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

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?

No

TOR12: EXPERT CONSULTANTS

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

Yes

KIND OF CONSULTANCY	Location	SUBJECT (FACULTATIVE)

29. Additional comments regarding your report:

Yes

1. Comment for vaccination strategy from our lab: H5N8/H5N1 viruses bearing the clade 2.3.4.4b HA gene are widely circulating in wild birds and causing problems in domestic poultry in numerous countries around the world. To improve animal welfare, reduce economic damage, and reduce human infections, vaccination should be immediately and seriously considered as a control strategy not only in underdeveloped countries, but also in developed countries. Any unnecessary obstacles to vaccination strategies should be removed immediately and forever.

2. We can not see the data of TOR6 after we completed the forms of this report system and clicked the button 'save and continue'. We tried three times and faced the the same problem.