WOAH Reference Laboratory Reports Activities 2022

Activities in 2022

This report has been submitted : 15 février 2023 10:03

Laboratory Information

Name of disease (or topic) for which you are a designated WOAH Reference Laboratory:	Viral haemorrhagic septicaemia
Address of laboratory:	Pathology research division in aquaculture research department, National Institute of Fisheries Science (NIFS), Ministry of Oceans and Fisheries 216 Gijanghaean-ro, Gijang-eup, Busan 46082 Korea
Tel.:	+82-51-720-2483
E-mail address:	hjkim1882@korea.kr
Website:	https://www.nifs.go.kr/fishguard/woah02
Name (including Title) of Head of Laboratory (Responsible Official):	Dong-Sik Woo
Name (including Title and Position) of WOAH Reference Expert:	Hyoung Jun Kim
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
Direct diagnostic tests		Nationally	Internationally

Virus inoculation method using fish cell line		19	
Conventional RT-PCR method for VHS		19	
Real-time RT-PCR method for VHS		19	

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
Multiple positive control DNA for crustacean diseases using real-time PCR method	Pathogen gene detection of crustacean	Yes	1mL	1mL	1 (EU reference laboratory for crustacean diseases	Europe

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.)
Conventional RT-PCR method for VHSV gene detection using novel 3F2R primer set (updated on WOAH diagnostic manual for VHS)	1. 4.4.2. Conventional RT-PCR & 4.5. Amplicon sequencing; https://www.woah.org/fileadmin/Home/eng/Health_standards/aahm/current/2.3.10_VHS.pdf 2. Validation of a novel one-step reverse transcription PCR method for detecting viral haemorrhagic septicaemia virus. Aquaculture 492, 170-183 3. Importance of the 3'-terminal nucleotide of the forward primer for nucleoprotein gene detection of viral hemorrhagic septicemia virus by conventional reverse-transcription PCR. Indian Journal of Microbiology 59(2): 234-236
Development of a novel	

real-time PCR method based on PNA probes for detecting and genotyping of VHSV	Kim, H.J., Kwon, S.R., Olesen, N.J., Cuenca, A. 2023 Development of a novel real-time RT-PCR method using peptide nucleic acid (PNA) probes for detecting and genotyping of viral haemorrhagic septicaemia virus (VHSV). Aquaculture. Submitted.
Method for determining false negative and false positive reactions for target pathogen gene detection based on international standard real-time RT-PCR of viral haemorrhagic septicaemia	1. Patent (RO/KR 10-2242634) 2. PCT KR 2021/000001

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

Yes

NAME OF THE NEW VACCINE DEVELOPED	DESCRIPTION AND REFERENCES (PUBLICATION, WEBSITE, ETC.)
DNA vaccine dual-expressing viral hemorrhagic septicemia virus glycoprotein and C-C motif chemokine ligand 19	Kim, J.Y., Kim, H.J., Park, J.S., Kwon, S.R. (2022) DNA vaccine dual-expressing viral hemorrhagic septicemia virus glycoprotein and C-C motif chemokine ligand 19 induces the expression of immune-related genes in zebrafish (Danio rerio). Journal of Microbiology 60, 1032-1038

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?

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
LATVIA	False positive reaction for real-time PCR method for diagnosis of aquatic animal diseases	by E-mail and facebook messenger

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
		Scientific meeting and		

EURL Annual workshop for fish and crustacean diseases	3 days	cooperation research for validation of crustacean diseases positive materials using real-time PCR	European Union reference laboratory for fish and crustacean diseases	DENMARK

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:
Our laboratory got 5 VHSV isolates from NFQS (Quarantine group and diseases control group for domestic) in 2022. We will check the gene analysis using WOAH diagnostic manual.

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

No

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:

4

1. Kole, S., Kim, H.J., Jung, S.J. 2022 Complete Genome Sequence of Anguillid Herpesvirus 1 Isolated from Imported Anguilla rostrata (American Eel) from Canada. Microbiology Resource Announcements

2. Kim, J.Y., Kim, H.J., Park, J.S., Kwon, S.R. 2022 DNA vaccine dual-expressing viral hemorrhagic septicemia virus glycoprotein and C-C motif chemokine ligand 19 induces the expression of immune-related genes in zebrafish (Danio rerio). Journal of Microbiology

3. Yu, Y.B., Choi, J.H., Kang, J.C., Kim, H.J., Kim, J.H. 2022 Shrimp bacterial and parasitic disease listed in the OIE: A review. Microbial Pathogenesis

4. Lee, J.H., Yoo, H.J., Ahn, Y.J., Kim, H.J., Kwon, S.R. 2022 Evaluation of the Antimicrobial Effect of Graphene Oxide Fiber on Fish Bacteria for Application in Aquaculture Systems. Materials

b) International conferences:

1

Kim, H.J., Kim, A.R., Kim, S.J., Song, J.Y., Do, J.W., Kim, M.S., Cho, M.Y., Choi, H.S., Kwon, S.R., Kim, Y.C. Development of artificial plasmid DNA as VHS and IHN diagnostic positive controls for real-time PCR to identify pathogen gene contamination. Korean Federation of Fisheries Science and Technology Societies (KOFFST)

c) National conferences:

1

Kim, S.J., Kim, T.H., Kim, H.J., Kim, M.S., Choi, H.S., Han, H.J. 2022 Efficacy of adjuvants administered with a formalin-killed vaccine against

Streptococcus parauberis in olive flounder, Paralichthys olivaceus. Journal of Fish Pathology

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 : 15

b) Seminars : 1

c) Hands-on training courses: 1

d) Internships (>1 month)

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
A, B, C	Sri Lanka	2
A, B, C	Indonesia	2
A, B, C	Ghana	2
A, B, C	Philippines	1
A, B, C	Peru	1
A, B, C	East Timor	2
A, B, C	Tanzania	2
A, B, C	Cameroon	1
A, B, C	Laos	1
A, B, C	Uganda	1

TOR8: QUALITY ASSURANCE

18. Does your laboratory have a Quality Management System?

Yes

Quality management system adopted	Certificate scan (PDF, JPG, PNG format)	
ISO/IEC I7025:2017	PDF	KT664 Certificate NIFS.pdf

19. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
Molecular techniques for Viral haemorrhagic septicaemia	KOLAS (Korea Laboratory Accreditation Scheme)
Molecular techniques for Koi herpesvirus disease	KOLAS (Korea Laboratory Accreditation Scheme)

Molecular techniques for Spring Viraemia of carp	KOLAS (Korea Laboratory Accreditation Scheme)
Fish cell culture method	KOLAS (Korea Laboratory Accreditation Scheme)

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

No

TOR9: SCIENTIFIC MEETINGS

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

Yes

NATIONAL/ INTERNATIONAL	TITLE OF EVENT	CO-ORGANISER	DATE (MM/YY)	LOCATION	NO. PARTICIPANTS
International	Meeting to discuss about Aquatic focal point seminar at Busan in 2023	WOAH Regional Events in Asia and the Pacific	2022-11-25	Korea	3

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
OIE General Assembly	2022-05-23	On line	Deligate	Expert of WOAH reference laboratory for VHS
EURL annual workshop for fish and crustacean diseases	2022-05-30	Denmark	Deligate	Expert of WOAH reference laboratory for VHS

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.
Inter-laboratory proficiency test 2021 for identification and titration of VHSV, IHNV, EHNV, SVCV, IPNV (PT1) and identification of CyHV-3(KHV), SAV and ISAV (PT2)	Participant	46	WOAH reference laboratory for VHS in Korea / WOAH reference laboratory for VHS in Denmark

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.
Inter-laboratory proficiency test 2021 for identification and titration of VHSV, IHNV, EHNV, SVCV, IPNV (PT1) and identification of CyHV-3(KHV), SAV and ISAV (PT2)	Participant	46	WOAH reference laboratory for VHS in Korea / WOAH reference laboratory for VHS in Denmark

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 agreement (MOA) between the national institute of aquatic resources (WOAH reference laboratory for VHS in Denmark) and National Institute of Fisheries Science (NIFS, WOAH reference laboratory for VHS in Korea) on cooperative research project for fish disease control	Enhance and strengthen the bilateral relationship through cooperative research and meetings of the Sides for the development and standardization of diagnostic tools; methods to prevent the spread of infectious agents; disease prevention systems etc., in accordance with basic regulations of the WOAH aquatic animal health code	WOAH reference laboratory for VHS in Korea(NIFS) and WOAH reference laboratory for VHS in Denmark (DTU, National Institute of Aquatic Resources)

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?

Yes

Purpose for inter-laboratory test comparisons1	Role of your reference laboratory (organizer/participant)	No. participating laboratories	Region(s) of participating WOAH Member Countries
To primarily assess the identification of the fish viruses: VHSV, IHNV, EHNV, SVCV, IPNV, Ranavirus by cell culture	Participant	46	America Asia and Pacific Europe MiddleEast
Assessing the ability of participating laboratories to identify the fish pathogens: ISAV, SAV and CyHV-3(KHV) by biomolecular methods (PCR, sequencing and genotyping	Participant	46	America Asia and Pacific Europe MiddleEast

TOR12: EXPERT CONSULTANTS

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

Yes

KIND OF CONSULTANCY	Location	SUBJECT (FACULTATIVE)
Meeting about WOAH Aquatic focal point semina and steering committee of the regional collaboration framework in Asia and Pacific	Animal and Plant Quarantine Agency in Korea (Gimcheon)	Meeting for Aquatic Animal focal point seminar and steering committee at Busan in 2023

29. Additional comments regarding your report:

Yes

In 2022, our laboratory was performed the international education for diagnosis of fish disease. We successfully finished the education under COVID-19 situation..