

OIE Reference Laboratory Reports Activities

Activities in 2019

This report has been submitted : 2020-01-20 14:11:55

Name of disease (or topic) for which you are a designated OIE Reference Laboratory:	Viral haemorrhagic septicaemia
Address of laboratory:	Aquatic Animal Quarantine (AAQ) Laboratory General Service Division National Fishery Products Quality Management Service (NFQS) Ministry of Oceans and Fisheries 337 Haeyang-ro Yeongdo-gu Busan, 49111 KOREA (REP. OF)
Tel.:	+82-51 400 56 53
Fax:	+82-51 400 56 55
E-mail address:	hjkim1882@korea.kr
Website:	http://www.nfqs.go.kr/
Name (including Title) of Head of Laboratory (Responsible Official):	Mr. Dong Yeob Yang, General Director of NFQS
Name (including Title and Position) of OIE Reference Expert:	Hyoung Jun Kim, Ph.D.
Which of the following defines your laboratory? Check all that apply:	Governmental

ToR 1: To use, promote and disseminate diagnostic methods validated according to OIE Standards

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 OIE Manual (Yes/No)	Total number of test performed last year	
		Nationally	Internationally
Indirect diagnostic tests		Nationally	Internationally
-	-	-	-
Direct diagnostic tests		Nationally	Internationally
Cell cultivation of BF-2	Yes	3	427
Cell cultivation of EPC	Yes	467	
Conventional RT-PCR	Yes	3	427
Real time RT-PCR	Yes	3	

ToR 2: To develop reference material in accordance with OIE requirements, and implement and promote the application of OIE Standards. To store and distribute to national laboratories biological reference products and any other reagents used in the diagnosis and control of the designated pathogens or disease.

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

No

3. Did your laboratory supply standard reference reagents (non OIE-approved) and/or other diagnostic reagents to OIE Member Countries?

Yes

Type of reagent available	Related diagnostic test	Produced/ provide	Amount supplied nationally (ml, mg)	Amount supplied internationally (ml, mg)	No. of recipient OIE Member Countries	Region of recipients
BF-2 cell line	Virus propagation	Yes	0	60ml	1	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East
Other cell lines (RTG-2, FHM, BF-2, GF, EII, ASK, KF-1)	Virus propagation	Yes	14 x 5ml	0	0	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input type="checkbox"/> Europe <input type="checkbox"/> Middle East
VHSV IVa recombinant virus	Co-research	Yes	0	1 ampoule	1	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East
VHSV genotypes (I, II, III, IVa, IVb)	Co-research	Yes	0	5 ampoules	1	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East
VHSV Chimeric virus	Co-research	Yes	0	14 ampoules	1	<input type="checkbox"/> Africa <input type="checkbox"/> Americas <input type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input type="checkbox"/> Middle East

4. Did your laboratory produce vaccines?

No

5. Did your laboratory supply vaccines to OIE Member Countries?

No

ToR 3: To develop, standardise and validate, according to OIE Standards, new procedures for diagnosis and control of the designated pathogens or diseases

6. Did your laboratory develop new diagnostic methods validated according to OIE Standards for the designated pathogen or disease?

Yes

7. Did your laboratory develop new vaccines according to OIE Standards for the designated pathogen or disease?

No

Name of the new test or diagnostic method or vaccine developed	Description and References (Publication, website, etc.)
Conventional RT-PCR method for VHSV gene detection using the new 3F2R primer set(Kim et al. 2018)	Hyoung Jun Kim, Argelia Cuenca, Niels Jorgen Olesen (2018) Validation of a novel one-step reverse transcription polymerase chain reaction method for detecting viral haemorrhagic septicaemia virus (Aquaculture 492, 170-183)

ToR 4: To provide diagnostic testing facilities, and, where appropriate, scientific and technical advice on disease control measures to OIE Member Countries

8. Did your laboratory carry out diagnostic testing for other OIE Member Countries?

No

9. Did your laboratory provide expert advice in technical consultancies on the request of an OIE Member Country?

Yes

Name of the OIE Member Country receiving a technical consultancy	Purpose	How the advice was provided
MICRONESIA (FEDERATED STATES OF)	Establishment of laboratory for diagnosis of fish diseases	Visit by Micronesia to Korea, Presentation, Meeting, Lab tour of OIE reference laboratory
IRAQ	Consultation of diagnostic tools and disease control for Koi herpesvirus disease	Visit by Iraq to Korea, Presentation, Meeting, Lab tour of OIE reference laboratory, Shareing the outbreak information to OIE reference laboratory for KHD (Japan, Dr. Yuasa)
ECUADOR	Diagnostic tools for fish viral diseases	Visit by Ecuador to Korea, Meeting, Education and training course for molecular techniques and cell culture method
VIETNAM	Check of diagnostic tools for aquatic animal diseases	On site visits to Vietnam, meeting

ToR 5: To carry out and/or coordinate scientific and technical studies in collaboration with other laboratories, centres or organisations

10. Did your laboratory participate in international scientific studies in collaboration with OIE Member Countries other than the own?

Yes

Title of the study	Duration	Purpose of the study	Partners (Institutions)	OIE Member Countries involved other than your country
Cooperation researches by MOA between Korea and Denmark	2017-2019	Infection trial using VHSV chimeric virus to rainbow trout	Dr. Niels Jorgen Olesen (DTU Aqua, OIE reference laboratory for VHS)	DENMARK
Cooperation researches by MOU between Korea and Japan	2018-2019	1. Study about Susceptible species to Koi herpesvirus 2. Effect of FBS concentration to support replication of KHV in CCB and KF-1 cell lines	Dr. Kei Yuasa, Dr. Satoshi Miwa(National Research Institute of Aquaculture, Fisheries Research Agency (OIE reference laboratory for KHD and RSIVD))	JAPAN

ToR 6: To collect, process, analyse, publish and disseminate epizootiological data relevant to the designated pathogens or diseases

11. Did your Laboratory collect epizootiological data relevant to international disease control?

No

If the answer is no, please provide a brief explanation of the situation:
In 2019, Our laboratory could not detect VHSV from several fish species in quarantine step.

12. Did your laboratory disseminate epizootiological data that had been processed and analysed?

No

If the answer is no, please provide a brief explanation of the situation:
In 2019, Our laboratory could not detect VHSV from several fish species in quarantine step.

13. What method of dissemination of information is most often used by your laboratory?

(Indicate in the appropriate box the number by category)

a) Articles published in peer-reviewed journals: 5

H.J.KIM (2019) 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.

J.S.PARK, H.J.KIM, Y.H.JOO and S.R.KWON (2019) Effect of Formalin Inactivation on Viral Hemorrhagic Septicemia Virus(VHSV). Korean J Fish Aquat Sci 52(6),644-649.

H.J.KIM, S.R.KWON, N.J.OLESEN, K.YUASA (2019) The susceptibility of silver crucian carp (*Carassius auratus langsdorfii*) to infection with koi herpesvirus (KHV). Journal of Fish Diseases 42(10):1333-1340.

H.J.KIM, S.R.KWON, K.YUASA (2019) Establishing the optimal fetal bovine serum concentration to support replication of cyprinid herpesvirus 3 in CCB and KF-1 cell lines. Journal of Virological Methods 276:113733

J.W.Jung, J.S.LEE, J.KIM, S.P.IM, S.W.KIM, J.M.S.LAZARTE, Y.R.KIM, J.H.CHUN, M.W.HA, N.N.KIM, K.D.THOMPSON, H.J.KIM, T.S.JUNG (2019) Involvement of CD4-1 T cells in the cellular immune response of olive flounder (*Paralichthys olivaceus*) against viral hemorrhagic septicemia virus (VHSV) and nervous necrosis virus (NNV) infection. Developmental & Comparative Immunology 103, 103518

b) International conferences: 4

H.J.KIM, S.R.KWON (2019) Importance of the 3'-Terminal Nucleotide of the Forward Primer for Conventional RT-PCR for VHSV gene detection. 19TH EAAP Meeting, Portugal.

H.J.KIM, S.R.KWON, K.YUASA (2019) Effect of FBS concentration variation on fish cell lines inoculated with CyHV-3. 19TH EAAP Meeting, Portugal.

Y.H.JOO, H.J.KIM, J.S.PARK, J.LIM, J.S.KIM, H.J.KIM, J.Y.KIM, J.B.PARK, S.R.KWON (2019) Effect of formalin incativation on viral hemorrhagic septicemia virus (VHSV). Korean Federation of Fisheries Science and Technology Societies, Korea.

M.S.KIM, S.Y.KIM, S.H.PARK, S.K.KIM, K.H.KIM, H.J.KIM (2019) Susceptibility of rainbow trout (*Oncorhynchus mykiss*) and olive flounder (*Paralichthys olivaceus*) to viral hemorrhagic septicemia virus (VHSV) genotypes. Korean Federation of Fisheries Science and Technology Societies, Korea.

c) National conferences: 0

d) Other:

(Provide website address or link to appropriate information) 1

H.J.KIM (2019) Research and activities in the OIE reference laboratory for viral haemorrhagic septicaemia in Korea. 1st meeting of the ad hoc Steering Committee of the Regional Collaboration Framework on Aquatic Animal Health in Asia and the Pacific, Thailand.

ToR 7: To provide scientific and technical training for personnel from OIE Member Countries

To recommend the prescribed and alternative tests or vaccines as OIE Standards

14. Did your laboratory provide scientific and technical training to laboratory personnel from other OIE Member Countries?

Yes

a) Technical visits: 17

b) Seminars: 17

c) Hands-on training courses: 1

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
a, b	Mongolia	2
a, b	Philippines	2
a, b	Malaysia	2
a, b	Kazakhstan	2
a, b	Micronesia	7
a, b, c	Ecuador	2
a, b	Vietnam	6
a, b	Iraq	15
a, b	Tanzania	3
a, b	Sri Lanka	3
a, b	Egypt	2
a, b	Tunisie	2
a, b	Dominican	2
a, b	Mauritania	2
a, b	Cameroon	2
a, b	Timor	2
a, b	Laos	2

ToR 8: To maintain a system of quality assurance, biosafety and biosecurity relevant for the pathogen and the disease concerned

15. Does your laboratory have a Quality Management System?

Yes

Quality management system adopted	Certificate scan (PDF, JPG, PNG format)
ISO/IEC 17025:2005	Certificate ISO17025 NFQS.pdf

16. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
Molecular techniques for VHS	KOLAS (Korea Laboratory Accreditation Scheme)
Cell culture method	KOLAS (Korea Laboratory Accreditation Scheme)

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

No

(See *Manual of Diagnostic Tests and Vaccines for Terrestrial Animals, Chapter 1.1.4*)

ToR 9: To organise and participate in scientific meetings on behalf of the OIE

18. Did your laboratory organise scientific meetings on behalf of the OIE?

Yes

National/ International	Title of event	Co-organiser	Date (mm/yy)	Location	No. Participants
International	MOU and cooperative research meeting of OIE reference laboratories between Korea and Japan	Kei Yuasa	02/19	Japan	7
International	Research Meeting between	N.J. Olesen	12/19	Denmark	8

19. Did your laboratory participate in scientific meetings on behalf of the OIE?

Yes

Title of event	Date (mm/yy)	Location	Role (speaker, presenting poster, short communications)	Title of the work presented
1st meeting of the ad hoc Steering Committee of the Regional Collaboration Framework on Aquatic Animal Health in Asia and the Pacific	11/19	Bangkok, Thailand	Short communications	Expert of OIE reference laboratory for VHS
OIE Global Conference on Aquatic Animal Health	04/19	Santiago, Chile	Participant	Expert of OIE reference laboratory for VHS
Regional Meeting on Aquatic Animal Health (Asia and the Pacific Region in OIE Global Conference on Aquatic Animal Health	04/19	Santiago, Chile	Short communications	Expert of OIE reference laboratory for VHS

ToR 10: To establish and maintain a network with other OIE Reference Laboratories designated for the same pathogen or disease and organise regular inter-laboratory proficiency testing to ensure comparability of results

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

Yes

21. Was your laboratory involved in maintaining a network with OIE Reference Laboratories designated for the same pathogen or disease by organising or participating in proficiency tests?

Yes

Purpose of the proficiency tests: ¹	Role of your Reference Laboratory (organiser/participant)	No. participants	Participating OIE Ref. Labs/ organising OIE Ref. Lab.
Inter-laboratory proficiency test 2019 by EU Reference Laboratory for Fish and Crustacean Diseases	Participant	1	OIE reference laboratory for VHS in Korea/OIE reference laboratory for VHS in Denmark

¹ validation of a diagnostic protocol: specify the test; quality control of vaccines: specify the vaccine type, etc.

22. Did your laboratory collaborate with other OIE 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 OIE Reference Laboratories
Memorandum of agreement (MOA) between the national institute of aquatic resources (OIE reference laboratory for VHS in Denmark) and National Fishery Products Quality Management Service (NFQS, OIE 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 OIE aquatic animal health code	OIE reference laboratory for VHS in Korea (NFQS) and OIE reference laboratory for VHS in Denmark (DTU, National Institute of Aquatic Resources)

ToR 11: To organise inter-laboratory proficiency testing with laboratories other than OIE Reference Laboratories for the same pathogens and diseases to ensure equivalence of results

23. Did your laboratory organise or participate in inter-laboratory proficiency tests with laboratories other than OIE Reference Laboratories for the same disease?

Yes

Note: See Interlaboratory test comparisons in: Laboratory Proficiency Testing at: <http://www.oie.int/en/our-scientific-expertise/reference-laboratories/proficiency-testing> see point 1.3

Purpose for inter-laboratory test comparisons ¹	No. participating laboratories	Region(s) of participating OIE Member Countries
To primarily assess the identification of the fish viruses: viral haemorrhagic septicaemia virus (VHSV), infectious hematopoietic necrosis virus (IHNV), epizootic haematopoietic necrosis virus (EHNV), spring viraemia of carp virus (SVCV), and infectious pancreatic necrosis virus (IPNV) by cell culture based methods	45	<input type="checkbox"/> Africa <input checked="" type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input checked="" type="checkbox"/> Middle East
Assessing the ability of participating laboratories to identify the fish pathogens: infectious salmon anaemia virus (ISAV), salmonid alphavirus and Cyprinid herpesvirus 3 (CyHV-3) (otherwise known as koi herpes virus - KHV) by biomolecular methods (PCR based)	42	<input type="checkbox"/> Africa <input checked="" type="checkbox"/> Americas <input checked="" type="checkbox"/> Asia and Pacific <input checked="" type="checkbox"/> Europe <input checked="" type="checkbox"/> Middle East

ToR 12: To place expert consultants at the disposal of the OIE

24. Did your laboratory place expert consultants at the disposal of the OIE?

Yes

Kind of consultancy	Location	Subject (facultative)
1st meeting of the ad hoc Steering Committee of the Regional Collaboration Framework on Aquatic Animal Health in Asia and the Pacific	Bangkok	Consultation meeting between OIE focal points and OIE experts in Asia-Pacific region
Regional Meeting on Aquatic Animal Health (Asia and the Pacific Region)	Santiago	Consultation meeting between OIE focal points and OIE experts in Asia-Pacific region

25. Additional comments regarding your report:

In 2019, our experts of OIE reference laboratory for VHS was submitted the reformatted OIE diagnostic manual for VHS using the new disease chapter template to the OIE aquatic animal health committee. In the manual, current primer set for conventional RT-PCR method was replaced with validated novel primer set.