WOAH Reference Laboratory Reports Activities 2022

Activities in 2022

This report has been submitted : 26 avril 2023 10:26

Laboratory Information

Name of disease (or topic) for which you are a designated WOAH Reference Laboratory:	Decapod Iridescent Virus 1
Address of laboratory:	376 Chung-Cheng Rd. Tamsui, New Taipei City, 251 Taiwan (Republic of China)
Tel.:	1-886-2-26212111
E-mail address:	ctu@mail.nvri.gov.tw
Website:	https://www.nvri.gov.tw
Name (including Title) of Head of Laboratory (Responsible Official):	Chwei-Jang Chiou, Director General
Name (including Title and Position) of WOAH Reference Expert:	Chien Tu, Consultant
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
DIV1	WOAH Disease Card	96	

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?

Yes

NAME OF THE NEW TEST OR DIAGNOSTIC METHOD DEVELOPED	DESCRIPTION AND REFERENCES (PUBLICATION, WEBSITE, ETC.)
Optimization and Validation of Real-time PCR for Detection of Decapod Iridescent Virus 1 MCP Gene	It's a poster in Animal Biologics Exhibition in Taiwan. This study aimed to optimize and validate the real-time quantitative PCR (QPCR) method for the DIV1 major capsid protein (MCP) gene published by Qiu et al. in 2020 to establish a locally standardized process and assay performance range. According to the WOAH Manual about the validation procedures for infectious disease detection methods, the nucleic acid extraction solution of healthy white shrimp was used as the matrix for serial dilution of standard positive plasmid samples to optimize and evaluate the performance characteristics of this QPCR analysis.Its standard curve showed a high linear correlation within the range of 4.6 × 102–4.6 × 109 DNA copies/reaction, and the correlation coefficient R2 value was 0.996; the regression equation was Ct = -3.474•log (DIV1 DNA copies) + 42.023. The analytical specificity (ASp) and analytical sensitivity (ASe) of this QPCR assay were further analyzed to be 100% (CI95%, 94.5%, 100.0%) and 92% (CI95%, 82.6%, 97.3%).This QPCR has demonstrated good phase 1 analytical performance for detecting DIV1 and will facilitate future ongoing phase 2 diagnostic assay validation procedures.

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?

No

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

No

TOR5: COLLABORATIVE SCIENTIFIC AND TECHNICAL STUDIES

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

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 infection with decapod iridescent virus 1 (DIV1) causes severe losses of farmed redclaw crayfish (Cherax quadricarinatus), whiteleg shrimp (Lito penaeus vanammei), and giant freshwater prawn (Macrobrachum rosenbergii). DIV1 is responsible for atrophied hepatopancreas, necrosis of hematopoietic tissue, hemocytes and lymphoid organ; mass mortality. The aim of this study was to identify and characterize the DIV1 in the outbreak reported in shrimp farms in Taiwan. In 2020, three cases of decapod iridescent virus 1 (DIV1) infection occurred in cultured penaeid shrimp in the northern region of Taiwan. Specimens from both Litopenaeus vanammei and Penaeus monodon gave positive PCR and identical sequencing results for DIV1. Moreover, cultured Penaeus monodon was first found to be infected with DIV1 through natural pathways. Additionally, we obtained positive PCR test for two specimens from two asymptomatic Cherax quadricarinatus farms close to the affected whiteleg shrimp farms, respectively, which means giant freshwater prawn may play a reservoir to transmit the virus. Nucleotide sequence analysis of the outbreak confirmed their close relation to the Chinese strain of the virus. This is the first report of DIV1 in cultured shrimp in Taiwan. The emergence of DIV1 signals a warning to shrimp aquaculture industry worldwide.

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:

The Emergence of Decapod Iridescent Virus 1 in Cultured Shrimp from Taiwan in 2020
Submitted and reviewed.

b) International conferences:

c) National conferences:

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?

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	TAF_accreditation_certificate_of_0853_Lab.pdf
ISO 17025	pdf	TAF_accreditation_certificate_of_3202_Lab(2022_2025).pdf

19. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
Identification of Salmonella spp.	Taiwan Accreditation Foundation
Identification of Mycobacterium spp.	Taiwan Accreditation Foundation
Test of Brucellosis serum antibodies	Taiwan Accreditation Foundation
Nervous Necrosis Virus Nucleic Acid Detection	Taiwan Accreditation Foundation
Red Sea Bream Iridoviral Disease Nucleic Acid Detection	Taiwan Accreditation Foundation
Koi Hepesvirus Nucleic Acid Detection	Taiwan Accreditation Foundation
Spring Viremia Carp Virus Nucleic Acid Detection	Taiwan Accreditation Foundation
White Spot Syndrom Virus Nucleic Acid Detection	Taiwan Accreditation Foundation
Perkinsus olseni Nucleic Acid Detection	Taiwan Accreditation Foundation

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

Yes

1. Our Institute has been importing risk analysis of the OIE Terrestrial Animal Health Code and OIE Aquatic Animal Health Code for many years. 2. We established a biological risk communication process, including biohazard identification, biorisk assessment, and management. Relative documents have been combined in Lab’s ISO 17025 quality management system. 3. We also organized a biosecurity team to tutor and keep all laboratories working excellently with the risk management system.

TOR10: NETWORK WITH WOAH REFERENCE LABORATORIES

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

No

24. Are you a member of a network of 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?

No

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?

Yes

Purpose for inter-laboratory test comparisons1	Role of your reference laboratory (organizer/participant)	No. participating laboratories	Region(s) of participating WOAH Member Countries
1. Determining a laboratory's capability to conduct specific diagnostic tests. 2. Harmonising existing test methods. 3. Assigning values and ranges to standard materials. 4. Resolving interlaboratory differences.	Both ORGANIZER and PARTICIPANT	2	Asia and Pacific

TOR12: EXPERT CONSULTANTS

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

29. Additional comments regarding your report: