WOAH Reference Laboratory Reports Activities 2023

Activities in 2023

This report has been submitted : 12 juin 2024 00:25

Laboratory Information

Name of disease (or topic) for which you are a designated WOAH Reference Laboratory:	Trichinellosis
Address of laboratory:	Centre for Food-borne and Animal Parasitology, Canadian Food Inspection Agency (CFIA) Saskatoon Laboratory, 116 Veterinary Road, Saskatoon, SK, Canada, S7N 2R3
Tel.:	13063857824
E-mail address:	brad.scandrett@inspection.gc.ca
Website:	https://inspection.canada.ca/science-and-research/our-laboratories/saskatoon/eng/1549576715254/1549576742564
Name (including Title) of Head of Laboratory (Responsible Official):	David McKinnon, Director, CFIA Saskatoon Laboratory
Name (including Title and Position) of WOAH Reference Expert:	Brad Scandrett, Head, Centre for Food-borne and Animal Parasitology, CFIA Saskatoon Laboratory
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
Artificial Digestion		646	0
NGS genotyping (Lobanov et al., 2023)		142	16
PCR-RFLP (Sharma et al., 2020)		2	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
Trichinella spiralis						CANADA, FRANCE,

proficiency testing samples	Artificial Digestion	Produced	242	24	3	NEW ZEALAND,

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.)
Identification of Trichinella taxa using next-generation sequencing on the Illumina platform	This recently developed method has been validated and published (Lobanov V.A., Konecsni K.A., Scandrett W.B., Jenkins E.J. 2023. Identification of Trichinella taxa by ITS-1 amplicon next-generation sequencing with an improved resolution for detecting underrepresented genotypes in mixed natural infections. Parasites & Vectors, 16:466. DOI:10.1186/s13071-023-06035-1)

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?

Yes

NAME OF THE WOAH MEMBER COUNTRY RECEIVING A TECHNICAL CONSULTANCY	PURPOSE	HOW THE ADVICE WAS PROVIDED
CANADA	Ongoing training and/or proficiency assessment of industry analysts to perform the artificial digestion assay for Trichinella and to facilitate effective oversight of industry labs performing this testing on horse meat or pork to meet requirements for export and domestic food safety (i.e., ready-to-eat products)	In-person, remote (e-mail/virtual meetings)
CANADA	Ongoing provision of scientific advice and proficiency assessment of analysts performing the artificial digestion assay for Trichinella in walrus meat, a food safety concern in the Arctic	Remote (e-mail/virtual meetings)
FRANCE	Ongoing assessment of Trichinella artificial digestion assay proficiency sample testing results	Remote (e-mail)
NEW ZEALAND	Ongoing assessment of Trichinella artificial digestion assay proficiency sample testing results	Remote (e-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?

No

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

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:

Data on prevalence of Trichinella spiralis in the national swine herd were collected via digestion testing of approximately 20996 samples at our laboratory as per annual Sample Plan M215 under the CFIA National Microbiological Monitoring Program (NMMP). (Information on the NMMP M215 Sample Plan can be accessed at https://inspection.canada.ca/food-safety-for-industry/food-chemistry-and-microbiology/food-safety-testing-reports-and-journal-articles/eng/1453324778043/1453327843364).

In collaboration with the University of Saskatchewan, new data have been accrued on the geographic and host distribution of the recently described new Trichinella species, T. chanchalensis.

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:

Data from the CFIA T. spiralis monitoring program for breeder and market hogs and captive wild boar at slaughter are published in the National Microbiological Monitoring Program annual reports. (Annual reports can be accessed via https://inspection.canada.ca/food-safety-for-industry/food-chemistry-and-microbiology/food-safety-testing-reports-and-journal-articles/eng/1453324778043/1453327843364).

A new host record (American marten) for T. chanchalensis was included in a publication by Lobanov et al. and presented at an international conference by Scandrett et al. as per 16. below.

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:

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Lobanov V.A., Konecsni K.A., Scandrett W.B., Jenkins E.J. 2023. Identification of Trichinella taxa by ITS-1 amplicon next-generation sequencing with an improved resolution for detecting underrepresented genotypes in mixed natural infections. Parasites & Vectors, 16:466. DOI:10.1186/s13071-023-06035-1.

Martin Cheung, Daisy Yu, Tracy Chan, Navdeep Chahil, Christine Tchao, Michael Slatnik, Shobhit Maruti, Nina Sidhu, Brad Scandrett, Natalie Prystajecky, Muhammad G. Morshed, Catherine A. Hogan. 2023. The Brief Case: an Infectious Hazard of Hunting. Journal of Clinical Microbiology, Vol. 61, No. 4. https://doi.org/10.1128/jcm.00620-22.

b) International conferences:

2

Konecsni K.A., Scandrett W.B. 2023. Assessment of proficiency testing samples for digestion assay using freeze-tolerant sylvatic Trichinella spp. with low infectivity for domestic swine. International Conference on Trichinellosis (ICT-16) poster, Belgrade, Serbia, August 30- September 1, 2023.

Lobanov V.A., Konecsni K.A., Scandrett W.B., Jenkins E.J. 2023. Identification of Trichinella taxa by ITS-1 amplicon next-generation sequencing with higher sensitivity for under-represented species/genotypes in mixed infections. ICT-16 poster, Belgrade, Serbia, August 30- September 1, 2023.

c) National conferences:

1

Queiroz, C. Improving Trichinella taxa identification capacity using bioinformatics tools. CFIA R&D Symposium Presentation (virtual), November 22, 2023.

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

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Dixon, B., Guy, R., Scandrett, B. Zoonotic and foodborne parasites of concern in Canada's North. Genomic Adaptation and Resilience to Climate Change (GenARCC) Seminar Series (virtual), May 25, 2023.

Second meeting (virtual) of the WOAH Network of Collaborating Centres for Food-borne Zoonotic Parasites (Americas, European and Asia Pacific Regions), held December 20, 2023.

Queiroz, C. The application of next generation sequencing and bioinformatics to enhance diagnostics of foodborne parasites. CFIA Food Safety Research Seminar (virtual), March 19, 2024.

Dixon, B., Nasheri, N., Guy, R., Scandrett, B., Lung, O. Transmission patterns of zoonotic and emerging pathogens in Canada's North related to climate change. Genomic Adaptation and Resilience to Climate Change (GenARCC) Annual Meeting (virtual), April 16, 2024.

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/IEC 17025:2017	See attached pdf	Saskatoon Laboratory-SCC Scope of Accreditation 2024.pdf

19. Is your quality management system accredited?

Yes

Test for which your laboratory is accredited	Accreditation body
The double separatory funnel digestion procedure for the detection of Trichinella larvae in pork	ILAC Signatory SCC (Standards Council of Canada)
The double separatory funnel digestion procedure for the detection of Trichinella larvae in horse meat	ILAC Signatory SCC (Standards Council of Canada)
Test Method Development and Evaluation and Non-routine Testing (TMDNRT)	ILAC Signatory SCC (Standards Council of Canada)

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

Yes

Our laboratory continues to maintain a "biorisk management system" with all commensurate policies, procedures and documentation in accordance with our Human Pathogens and Toxins Act (HPTA) licensure issued by the Public Health Agency of Canada (PHAC) and Letters of Compliance for Level 2 in-vitro and in-vivo work with terrestrial animal pathogens in accordance with the Canadian Biosafety Standard (3rd Ed.) issued by the Office of Biohazard Containment and Safety, CFIA.

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
Second meeting (virtual) of the WOAH Network of Collaborating Centres for Food-borne Zoonotic Parasites	2023-12-20	Virtual	Speaker	Presentation of new staff and their expertise, and updates on developments/initiatives related to our CC activities, and on existing and proposed research projects at the

(Americas, European and Asia Pacific Regions)				CFIA WOAH CC for Food-borne Zoonotic Parasites

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
Trichinellosis	Participant in information exchange (via e-mail) regarding morphometrics and establishment in rodent models of Trichinella spp.	2	WOAH Reference Laboratory for Trichinellosis, Istituto Superiore di Sanità, viale Regina Elena 299 00161 Roma, Italy

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?

Yes

TITLE OF THE PROJECT OR CONTRACT	SCOPE	NAME(S) OF RELEVANT WOAH REFERENCE LABORATORIES
Ecology and biology of a new species of Trichinella in the North American Arctic	Information exchange (via e-mail) regarding recommendations on morphometrics and establishment in rodent models for recently described species Trichinella chanchalensis	WOAH Reference Laboratory for Trichinellosis, Istituto Superiore di Sanità, viale Regina Elena 299 00161 Roma, Italy

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	Name of the Test	WOAH Member Countries
Ongoing validation/verification of respective magnetic stirrer artificial digestion assays for Trichinella and of analyst competence at participating laboratories	Organiser and participant	8	The double separatory funnel digestion procedure for the detection of Trichinella larvae in pork. The double separatory funnel digestion procedure for the detection of Trichinella larvae in horse meat	CANADA, FRANCE, NEW ZEALAND,

TOR12: EXPERT CONSULTANTS

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

Yes

KIND OF CONSULTANCY	Location	SUBJECT (FACULTATIVE)
Review of WOAH Standards	Virtual	Invited expert final review (conducted jointly with the WOAH Reference Laboratory in Rome) of Member Countries comments pertaining to the WOAH Terrestrial Manual Chapter 3.1.22. on Trichinellosis

29. Additional comments regarding your report:

No