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Summary technical report for the UK National Reference Laboratory for foodborne viruses – Feb 18 to March 19

April 2019

Summary Technical Report for the UK National Reference Laboratory for Foodborne Viruses – Feb 18 to March 19

Final report v1

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1 Introduction

The Centre for Environment, Fisheries and Aquaculture Science (Cefas) Weymouth was designated as the UK National Reference Laboratory (NRL) for foodborne viruses in February 2018. This report summarises the activities carried out by the NRL during the first 14 months of this designation (until March 2019) according to the requirements of Regulation (EU) 2017/625 as defined in the Call Off Agreement between the Food Standards Agency and Cefas.

During the period covered by this report, responsibility for contamination of bivalve molluscs with viruses was included within the scope of the UK NRL for monitoring bacteriological and viral contamination of bivalve molluscs, and the activities of the NRL for foodborne viruses was therefore limited to other high-risk foods including soft fruit and salad vegetables. However, from April 2019 the scope of the NRL for foodborne viruses will be expanded to include bivalve molluscs, to harmonise with the new organisation at EURL level.

Many of the NRL duties detailed in Regulation (EU) 2017/625 and included in the Call Off Agreement for contingency purposes relate to the supervision by the NRL of Official Control Laboratories (OCLs). To date, no UK OCLs for analysis of foodborne viruses have been appointed – no activities of this type were carried out during the period covered by this report, therefore.

2 Objective 1. Provision of secretariat services

The UK NRL launched a website in July 2018, providing information about its role and responsibilities, relevant EU legislation and contact details including a dedicated e-mail address. From April 2019, this website will be amalgamated with the website for the UK NRL for monitoring bacteriological and viral contamination of bivalve molluscs, to reflect Cefas' new combined designation as UK NRL for foodborne viruses and bacteriological contamination of bivalve molluscs.

Interim progress reports were provided to FSA in May and October 2018, covering the periods February-March and April-September 2018 respectively.

3 Objective 2. Advice and representation within the UK / EU

Dr James Lowther and Dr Frederico Batista represented the UK NRL at the first workshop of NRLs for foodborne viruses, hosted by the EURL in Uppsala, Sweden on 15th-16th November 2018. Along with all other attendees, the UK NRL provided an overview of the national set-up in the UK, and the UK NRL's capabilities and experience in this field. In addition, the UK NRL was invited to give presentations on the state of play of virus standardisation (revision of ISO 15216-2, HEV standardisation etc.) and the future plans for the Cefas Food Safety laboratory's engagement in international circles given the termination of its designation as EURL for monitoring bacteriological and viral contamination of bivalve molluscs at the end of 2018.

From 27th-29th November 2018, Dr Batista from the UK NRL attended an EURL training course on detection of viruses in soft fruit, hosted by the EURL. The course included hands-on practical sessions as well as sessions covering the theory of the method, and guidance on necessary laboratory risk assessments.

Throughout the period covered by the report, the UK NRL has worked to develop practical expertise in the application of ISO 15216 methodology to matrices other than bivalve shellfish. The laboratory has been in a strong position to do this, due to its long and extensive experience with the use of ISO 15216 for quantification of viruses in shellfish. The UK NRL holds accreditation to ISO 17025 for this method (confirmed following a UKAS audit in October 2018), and accordingly many of the control materials, equipment monitoring and reagent traceability systems etc. are already in place.

Method implementation work has prioritised berries as firstly the highest risk matrix within the scope of the UK NRL, and secondly as the matrix that was the main focus of the EURL during 2018.

The method in ISO 15216 was trialled successfully in several different type of berries (strawberries, raspberries, blackberries, redcurrants and blackcurrants) with satisfactory extraction efficiencies and RT-PCR inhibition levels obtained. Additionally, contaminated strawberry samples from an outbreak that occurred in Germany in 2015 were analysed. Both GI and GII norovirus were detected in those samples but not hepatitis A virus (HAV). An apparently higher norovirus load was observed in the surface of the strawberries when compared with the interior of the strawberries. No

differences were observed in the detection of norovirus between strawberries with different sizes.

The method was also trialled using some non-berry matrices including lettuce, spring onion and the exterior surface of red peppers (as a representative of the “food surfaces” matrix described in ISO 15216). In all cases satisfactory extraction efficiencies and RT-PCR inhibition levels were obtained.

Standardised laboratory protocols for extraction of virus and RNA from non-shellfish matrices and for detection and quantification of foodborne viruses (norovirus and HAV) have been produced.

4 Objective 3. Production of standard operating procedures, codes of practice and guidance documents

The UK NRL has developed two separate generic protocols, covering quantification of norovirus and hepatitis A virus in soft fruit and detection of norovirus and hepatitis A virus on surfaces respectively. These detailed protocols are fully compliant with ISO 15216, and provide all the necessary information for an OCL to implement the methods in their own laboratories. These protocols will be distributed via the website for the combined UK NRL for foodborne viruses and bacteriological contamination of bivalve molluscs (as described above), when this is launched.

5 Objective 4. Compliance assessment via audits and ring trials

The UK NRL took part in proficiency testing distribution EFV 01 organised by the EURL in December 2018. Two 25g samples of raspberries were distributed and tested for norovirus GI, GII and hepatitis A virus. The UK NRL identified the viruses contained in the samples with 100% accuracy. In addition, the UK NRL was one of only two NRLs that reported quantities for the test samples; in each case the quantity reported was within the range of values reported by the EURL for its reference analyses.

6 Objective 5. Co-ordination within the UK of EURL initiatives

No relevant EURL initiatives occurred during the period covered by this report.

7 Objective 6. Communication of results and data use

In addition to interim progress reports delivered under Objective 1, the UK NRL's report on the first workshop of NRLs was provided to FSA in December 2018. Formal and informal project meetings were held with FSA on 6th June, 2nd October and 22nd November 2018, and EURL reports on the workshop and proficiency testing, plus additional notifications of significant developments were provided by e-mail.

8 Objective 7. Provision of additional services where requested by FSA

No additional services were requested by FSA during the period covered by this report.

9 Planned activities for 2019-2020

The following activities are planned for the forthcoming year:

- Provision of advice and responding to enquiries as required.
- Support with outbreaks of norovirus or hepatitis A virus in shellfish or soft fruits
- Attendance at the workshop of Foodborne Viruses NRLs, hosted by the EURL
- Participation in EURL proficiency testing for viruses in berries and shellfish if this is still available to the UK post Brexit
- Participation in Cefas International Centre of Excellence proficiency testing for viruses in shellfish
- Participation in PHE/Cefas proficiency testing for viruses in LENTICULE SAMPLES
- Publication of protocols for quantification of viruses in shellfish and soft fruits, and detection of viruses on food surfaces on the NRL website
- Participation in EURL initiatives as and when they arise e.g. the Working Group on Next Generation Sequencing, if this is still available to the UK post Brexit
- Maintenance of UKAS accreditation to ISO/IEC 17025 of laboratory testing of shellfish for norovirus and hepatitis A virus
- Participation in standardisation groups including CEN/TC275/WG6/TAG4 "viruses in foods" and BSI AW/009 "microbiology"