

Optimising extraction and RT-qPCR-based detection of hepatitis E virus (HEV) from pork meat and pork products

Area of research interest: Foodborne pathogens

Study duration: 2020-01-01

Planned completion: 31 December 2022

Project status: Ongoing

Project code: FS307033

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Background

The FSA has commissioned Campden BRI, in collaboration with Glasgow University, to undertake a study which will assess the best way to detect hepatitis E virus (HEV) in pork meat and pork products.

There is a need to address the lack of standardised methods for detection across industry, so researchers aim to optimise elements of existing HEV extraction and detection methods which could be easily integrated into food laboratories capable of performing virus related work.

The need for a standardised method to extract and detect HEV from foods has also been identified as a key priority at the joint FSA-EFSA foodborne viruses research workshop held in 2016 (Price?Hayward and Hartnell, 2016).

Between 2010 and 2016 there was an increase in non-travel HEV cases, with evidence suggesting a possible link between HEV cases and consumption of undercooked pork and pork products. There remains significant evidence gaps on HEV and key to gaining a better understanding is the development of a standardised and reliable HEV detection method. It is envisaged that the developed system will be put forward as a suitable candidate for International Organization for Standardization (ISO) certification as a standard method.

Research approach

A critical review will be completed to gather the available data on previous methods of extracting and detecting HEV from pork meat and pork products. The current methods of HEV extraction will be compared and then virus recovery optimised, with a high level of consistency. A quantitative RT-PCR assay for the detection of HEV will also be optimised.

The method developed would be able to quantify HEV from pork meat, offal and pork products with the aim of low-level detection if possible. Different pork matrices will be considered in the development of the method. The optimised method will be evaluated for repeatability and reproducibility of HEV detection in pork meat and pork products through interlaboratory trial.

A final report will be produced along with a draft protocol of the standardised method of extraction and detection of HEV, which would follow the format of an ISO standard, however it is important to note that this protocol will not address HEV infectivity. This work is essential to industry to help support further research and to ensure public health safety and confidence in pork meat and pork products.

Publication

The final report will be published at the end of the research project in December 2022 or shortly after.