

Low Prevalence of Hepatitis E Viral RNA in Retail Pig Livers, Pig Blood Curds and Oysters in Hong Kong

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Background/Objective

Hepatitis E virus (HEV) is increasingly recognized as a cause of foodborne hepatitis. Phylogenetic analysis reveals close relatedness of HEV between isolates from clinical cases and infected pigs, suggesting zoonosis as a probable source of human HEV infections. Here, we aim at evaluating the prevalence of HEV in high-risk food items known to harbor the virus in Hong Kong.

Method

Three high-risk food items were investigated: pig livers, pig blood curds and oysters. All samples were purchased from local retail points during March 2014-September 2014. Samples (2g for oyster and 250mg for other food types) were homogenized in TRIzol reagent using Precellys Minilys and viral RNA was extracted and purified using QIAamp Viral RNA Mini kit. All samples were spiked with an exogenous RNA during extraction. Viral RNA detection was performed using a widely used and broadly reactive quantitative reverse-transcription—polymerase chain reaction (RT-qPCR) assay targeting open reading frame 3. A subset of 50 samples were randomly selected for spike RNA validation according to acceptance sampling standard MIL-STD-105. Prevalence was determined and 95% confidence level was estimated using binomial exact calculation.

Result

A total of 129 pig livers, 64 pig blood curds and 129 oysters were sampled and tested. Spike RNA was detected in all selected samples. HEV RNA was detected in 2 pig livers and 1 oyster. The prevalence of HEV in pig livers and oysters was estimated to be 1.6% (95% confidence interval 0.2-5.5%) and 0.8% (0.0-4.2%), respectively. Cycle threshold values of positive samples were close to the lower limit of detection of the RT qPCR assay.

Conclusion

HEV RNA was detectable at low prevalence in retail pig livers and oysters. Considering both food items are frequently consumed in our society, precautionary measures should be taken during purchase, storage, preparation, and cooking of these high-risk food items to minimize HEV infections.