ZOONOTIC PATHOGENS IN THE PORK CHAIN

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Porcine blood as sporadic source of foodborne hepatitis E virus for pork meat products: preliminary results

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Introduction

Hepatitis E virus (HEV) is recognised as a zoonotic pathogen transmitted via foodstuff. The aim of the present study was an assessment of the occurrence of HEV in porcine blood, liver and raw minced meat used for production of pork meat products.

Material and Methods

An incoming raw material (IRM) encompassing porcine blood (56 samples), liver (47 samples) and minced meat (56 samples) were analyzed for the presence of HEV and porcine adenovirus (pAdV) as an index virus of faecal contamination. IRM was collected from the local slaughterhouse and meat retailers. Virus extraction from pig liver and minced meat was performed using TRIzol (TRI Reagent®) followed by isolation of viral RNA using a NucliSens kit (BioMérieux) (Szabo et al., 2015). A QIAamp® Viral RNA Mini Kit (Qiagen) was used for processing of blood samples. A detection of HEV and pAdV was conducted using the virus specific duplex real-time (RT) PCR protocols with subsequent quantification of HEV genome copy numbers (Maunula et al., 2013). Molecular typing of detected HEV strain was carried out based on the virus ORF2 PCR amplicons (Huang et al., 2002). The correct operation of the detection methods was monitored using a sample process control virus added to each sample before the analysis (Rzeżutka et al., 2008).

Results

In total, 159 samples were tested for the presence of enteric viruses. HEV was solely detected in one sample of porcine blood which contained 1.4 x 10^4 HEV genome copy/ml. None of the tested samples of pork liver (0/47) and minced meat (0/56) was positive for HEV RNA. A sequence analysis of the virus ORF 2 genome fragment identified HEV 3e subtype. PAdV was present in six samples of pig's blood (6/56).

Discussion and Conclusion

Sporadic detection of HEV in porcine blood suggests that blood could be a virus source for pork meat products when used for their production. Likewise these results may also indicate at low prevalence of HEV infections in pigs raised in Poland. Additionally, the sporadic finding of pAdV in IRM confirms maintaining of good sanitary conditions during animal slaughter and subsequent processing of meat and blood.

References

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