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Viral hepatitis and HIV/HCV co-infection

AUTOCHTHONOUS HEPATITIS E CASES: WHERE DOES THE VIRUS COME FROM?

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In recent years, several autochthonous hepatitis E cases and a high seroprevalence have been reported. These data indicate a high prevalence of hepatitis E virus (HEV) infections. Except in cases related to blood transfusion, a potential source of contamination is the consumption of porcine products or food contaminated by an environmental source. As suggested by the CDC and EFSA, the objective of the study was to evaluate the prevalence HEV in food samples, not only evaluating pork products.

A global method for HEV detection in clinical samples, environmental or food samples was set up. Based on methods developed for norovirus detection in food samples, standard protocols have been developed and validated. The kit hepatitisE@ceeramTools was used for real time RT-PCR detection. A large prevalence study was conducted on 440 food samples collected worldwide in food companies in 2011. These samples include pork liver sausages (4 samples as a control), shellfish (36), fruits (77), vegetables (12), herbs and spices (230), process water (62), ready-to-eat food (20). These samples were also tested for norovirus GI, GII and hepatitis A virus (HAV). A study was conducted on pig manure (100 samples) collected from 5 pig breeding positive for HEV to evaluate the persistence of HEV after manure treatments.

The kit hepatitisE@ceeramTools was validated by the french national reference center for the testing of clinical samples. The specificity was tested for the 4 different genotypes leading to a sensitivity of 5 copies/reaction and 4 UI/ml of WHO HEV standard. On food or environmental samples, a limit of quantification of the method of 500 genome copies was obtained whatever the samples. Below this limit, a sample is considered positive but not quantifiable with reliability. The prevalence levels for norovirus GI, GII and HAV were of 2.95%, 8.6% and 0.45% respectively. The results obtained for HEV demonstrate a prevalence of 0,9% with positive samples including pork liver sausage (2 samples), pepper (1) and laurel powder (1). Concerning treated pig manure, 12 % were positive with low level of contamination (£ 1000 genome copies/g of manure).

To our knowledge, this is the first large study conducted on HEV prevalence in food samples to try to understand the origin of autochthonous hepatitis E cases and the potential origin of contamination from food. Our results demonstrate a prevalence for HEV in food samples, in the same range than HAV. The spreading of pig manure does not appear to be an agricultural practice at risk for HEV. All these results demonstrate that except pork liver products, other types of food do not seem to be a potential source of contamination. Such study could be helpful to explain the increase of human hepatitis E cases and better prevent HEV autochthonous cases.