FSVO Research Call 2017
Hepatitis E viruses along the food chain

1 Problem definition and trigger for the research question

Hepatitis E is an infectious inflammation of the liver caused by the hepatitis E virus (HEV). HEV genotypes 3 and 4 are zoonotic viruses that can infect both animals (especially pigs and wild animals) and humans. At the current time, no precise data are available for Switzerland on the actual prevalence of hepatitis E in humans. The scientific study “Assessment of the risk of foodborne transmission and burden of Hepatitis E in Switzerland”\(^1\) presented data on the prevalence of HEV in pig livers from slaughterhouses throughout Switzerland and, on that basis, quantified the risks of contamination with HEV after consumption of meat products containing raw and cooked pig’s liver (“high risk liver product”). The study estimated the total number of cases of hepatitis E occurring in Switzerland at around 1,500 per year.

Both the Federal Food Safety and Veterinary Office (FSVO) and the Federal Office of Public Health (FOPH) are charged with expanding knowledge of HEV and improving the data basis on the situation in Switzerland. HEV is a One Health issue and is perceived as such by both Offices. Research projects and studies should be coordinated. This call contains research questions within the area of competence of the FSVO.

2 Specific research questions

- Development and validation of methods for assessing HEV infectivity in food.
- Which factors or technologies lead to a reduction in the HEV burden in food? Where, how and to what extent can a reduction be achieved?
- Determination of HEV tenacity in the animal, in carcasses, in the environment and in food.
- Investigation of HEV infection in pigs: How and by what dynamic is HEV transmitted from animal to animal? How do antibodies and viruses develop after infection? What is the organotropism, in which organs are viruses found and in which quantities?
- Which risk factors and transmission routes must be taken into account for HEV infection in pigs? Corresponding development and validation of effective prophylaxis.
- Investigations of the epidemiology of HEV in wild boars and wild ruminants and their importance as virus reservoirs.

3 Expected implementation goals and benefits

The methods for determining HEV infectivity in food permit a better assessment of the risk posed by certain foods. Information on the tenacity of HEV and the potential for reduction in food can be taken into account in HACCP and in the design of any hygiene regulations. Information on HEV infection in pigs, wild boars and wild ruminants, as well as information on transmission, risk factors and prophylaxis, permits an assessment of whether it is feasible and appropriate to control HEV in animal populations and, if so, how.

4 Assessment criteria for selection purposes

Competence and experience of the applicant in the field of virus research and diagnosis. The applicant has the necessary prerequisites for carrying out infection studies \textit{in vivo}.

\(^1\) A. Müller et al., Int J Food Microbiol (2017) 242:107-115 (FSVO project 4.15.01)
5 Minimum requirements in terms of content
One research question is answered in full or two questions are answered in part.

6 Nice-to-have criteria
All research questions are answered in full.

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