Tick-borne encephalitis- A food safety risk for humans consuming unpasteurized milk and milk products from goat, sheep and cattle in Sweden

Alexander Hanberger

Supervisor: Ann Albihn, Department of Biomedical Sciences and Veterinary Public Health (BVF), Swedish University of Agricultural Sciences (SLU)

Assistant Supervisor: Anna Omazic & Elina Lahti, National Veterinary Institute, Sweden

Examinator: Sofia Boqvist, BVF, SLU,

Degree Project in Veterinary Medicine

SUMMARY

Tick-borne encephalitis (TBE) is one of the most important vector-borne human infections affecting the central nervous system and is caused by tick-borne encephalitis virus (TBEV) which is transmitted to humans primarily by ticks, mainly *Ixodes* spp. The ticks are expanding their distribution in Sweden and the number of reported cases of human TBE in Sweden has been increasing considerably since the end of the 20th century. Ruminants do not show clinical signs when infected by TBEV but can secrete the virus via milk which can cause food-borne outbreaks of TBE. Several outbreaks have been reported in Europe but no such case has yet been reported in Sweden. In this study, the presence of TBEV antibodies in bulk milk from 108 dairy farms in Sweden were analyzed using an enzyme-linked immunosorbent assay (ELISA). Antibodies were detected in 3.7% (n=4) of the samples and 15.7% (n=17) had levels of antibodies on the border between positive and negative (borderline value). The results indicate that it could be a risk for humans to contract TBE if consuming unpasteurized milk in Sweden. A descriptive study based on a questionnaire to the farmers was also included in this study. Based on the questionnaire results, several factors may contribute to the risk of food-borne TBE on Swedish farms such as (lack of) pasteurization of milk and low human vaccination status. Further studies are needed to investigate if there is TBEV present in milk or ticks from seropositive and potentially seropositive (borderline) farms.