

Comparison of human- and rat-derived strains of rat hepatitis E virus in cell lines of both hosts

Wednesday, 11 October 2023 13:45 (15 minutes)

Rat hepatitis E virus (ratHEV) is distantly related to the well-studied human-pathogenic HEV genotypes 1-4 and distributed in rats worldwide. Recently, ratHEV infection has been demonstrated in several hepatitis cases in human patients from Hongkong, Canada and Spain. To characterize rat- and human-derived ratHEV strains in more detail, we generated genomic plasmids, which were in-vitro transcribed, capped and transfected into human hepatoma cell lines to generate infectious virus. One ratHEV strain was derived from a hepatitis patient from Hongkong, the other from a rat in Germany, and a human genotype 3 strain served as a control. Virus replication was evident for all viruses in all transfected cell lines. However, it was most robust in Huh7-Lunet BLR cells, which could also be passaged resulting in persistently infected and virus-producing cell lines. The generated viruses were used to infect human-derived PLC/PRF/5, Huh7 and Huh7-Lunet BLR hepatoma cell lines as well as rat-derived hepatoma cell lines MH1C1, clone 9 and H4IIE. All of the viruses replicated in the human cell lines, but showed no stable infection of the rat-derived cell lines. The ratHEV strain from the human patient showed a more efficient replication in the human cells as compared to the rat-derived strain, which may indicate a better adaptation to humans. Generally, the results show robust replication of ratHEV in human cell lines, which confirm its zoonotic potential for transmission to humans.

Keywords

cell culture; ratHEV; zoonotic potential; reversed genetics system; HEV

Registration-ID code

ZOO23-505

Professional Status of the Speaker

PhD Student

Junior Scientist Status

Yes, I am a Junior Scientist.

Primary author: PANAJOTOV, Jessica (Bundeminstitut für Risikobewertung)

Co-authors: Dr FALKENHAGEN, Alexander (Bundesinstitut für Risikobewertung); Mr SCHEMMERER, Mathias (National Consultant Laboratory for HAV and HEV, Institute of Clinical Microbiology and Hygiene, University Medical Center Regensburg, Regensburg, Germany); Prof. JOHNE, Reimar (Bundesinstitut für Risikobewertung)

Presenter: PANAJOTOV, Jessica (Bundeminstitut für Risikobewertung)

Session Classification: Session 12: Zoonoses & Wildlife II

Track Classification: Zoonoses & Wildlife