Transplacental transmission of field and rescued strains of BTV-2 and BTV-8 in experimentally infected sheep - DTU Orbit (04/11/2018)

Transplacental transmission of bluetongue virus has been shown previously for the North European strain of serotype 8 (BTV-8) and for tissue culture or chicken egg-adapted vaccine strains but not for field strains of other serotypes. In this study, pregnant ewes (6 per group) were inoculated with either field or rescued strains of BTV-2 and BTV-8 in order to determine the ability of these viruses to cross the placental barrier. The field BTV-2 and BTV-8 strains was passaged once in Culicoides KC cells and once in mammalian cells. All virus inoculated sheep became infected and seroconverted against the different BTV strains used in this study. BTV RNA was detectable in the blood of all but two ewes for over 28 days but infectious virus could only be detected in the blood for a much shorter period. Interestingly, transplacental transmission of BTV-2 (both field and rescued strains) was demonstrated at high efficiency (6 out of 13 lambs born to BTV-2 infected ewes) while only 1 lamb of 12 born to BTV-8 infected ewes showed evidence of in utero infection. In addition, evidence for horizontal transmission of BTV-2 between ewes was observed. As expected, the parental BTV-2 and BTV-8 viruses and the viruses rescued by reverse genetics showed very similar properties to each other. This study showed, for the first time, that transplacental transmission of BTV-2, which had been minimally passaged in cell culture, can occur; hence such transmission might be more frequent than previously thought.

General information
State: Published
Organisations: National Veterinary Institute, Section for Virology, University of Glasgow, Istituto Zooprofilattico Sperimentale dell’Abruzzo e del Molise “G. Caporale”
Contributors: Rasmussen, L. D., Savini, G., Lorusso, A., Bellacicco, A., Palmarini, M., Caporale, M., Rasmussen, T. B., Belsham, G., Bøtner, A.
Number of pages: 15
Publication date: 2013
Peer-reviewed: Yes

Publication information
Journal: Veterinary Research
Volume: 44
Issue number: 1
Article number: 75
ISSN (Print): 0928-4249
Ratings:
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Scopus rating (2017): SJR 1.266 SNIP 1.139
Web of Science (2017): Impact factor 2.903
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): SJR 1.44 SNIP 1.303
Web of Science (2016): Impact factor 2.798
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): CiteScore 2.66 SJR 1.537 SNIP 1.153
Web of Science (2015): Impact factor 2.928
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): CiteScore 2.46 SJR 1.453 SNIP 1.423
Web of Science (2014): Impact factor 2.815
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): CiteScore 3.13 SJR 1.681 SNIP 1.701
Web of Science (2013): Impact factor 3.383
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 2
Scopus rating (2012): CiteScore 2.97 SJR 1.461 SNIP 1.45
Web of Science (2012): Impact factor 3.426
ISI indexed (2012): ISI indexed yes
Web of Science (2012): Indexed yes
BFI (2011): BFI-level 2
Scopus rating (2011): CiteScore 3.85 SJR 1.712 SNIP 1.655
Web of Science (2011): Impact factor 4.06
ISI indexed (2011): ISI indexed yes
Web of Science (2011): Indexed yes
BFI (2010): BFI-level 2
Scopus rating (2010): SJR 1.531 SNIP 1.606
Web of Science (2010): Impact factor 3.765
BFI (2009): BFI-level 2
Scopus rating (2009): SJR 1.489 SNIP 1.689
Web of Science (2009): Indexed yes
BFI (2008): BFI-level 2
Scopus rating (2008): SJR 1.578 SNIP 2.002
Web of Science (2008): Indexed yes
Scopus rating (2007): SJR 1.749 SNIP 2.189
Web of Science (2007): Indexed yes
Scopus rating (2006): SJR 1.353 SNIP 1.936
Scopus rating (2005): SJR 0.885 SNIP 1.567
Web of Science (2005): Indexed yes
Scopus rating (2004): SJR 0.79 SNIP 1.3
Web of Science (2004): Indexed yes
Scopus rating (2003): SJR 0.727 SNIP 1.068
Scopus rating (2002): SJR 0.809 SNIP 1.175
Scopus rating (2001): SJR 0.624 SNIP 1.169
Web of Science (2001): Indexed yes
Scopus rating (2000): SJR 0.416 SNIP 0.994
Web of Science (2000): Indexed yes
Scopus rating (1999): SJR 0.387 SNIP 0.738

Original language: English

Electronic versions:
1297_9716_44_75.pdf

DOIs:
10.1186/1297-9716-44-75

Bibliographical note
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Source: dtu
Source-ID: n:oai:DTIC-ART:bmc/392607821::32322
Research output: Research - peer-review › Journal article – Annual report year: 2013