VTEC O157 subtypes associated with the most severe clinical symptoms in humans constitute a minor part of VTEC 0157 isolates from Danish Cattle

The aim of this study was to compare the distribution of VTEC 0157 subtypes isolated from human sporadic infections with those in the Danish bovine reservoir, and to correlate the subtypes with the severity of the clinical symptoms in humans. The study included a total of 149 Danish eae-positive VTEC 0 157 isolates (63 of bovine origin and 86 from human clinical cases) isolated between 1987 and 2001. All were analysed by vtx-PCR-RFLP and phage typing. The vtx-PCR-RFLP showed that isolates carrying the vtx2 gene was more than four times as prevalent among the human clinical isolates (55%) as compared to the bovine isolates (13%). Furthermore, a significant correlation between the presence of the vtx2 gene and development of haemolytic-uraemic syndrome was found. The 149 isolates encompassed 16 different phage types (PTs). The majority (87%) of the human clinical isolates were identified, as PT2, PT4, PT8 or PT14 while only 46% of the bovine isolates belonged to these PTs. PT8 and PT14 were found at similar rates among bovine (36%) and human isolates (40%). However, the predominant PTs in the human isolates, PT2 (19%) and PT4 (28%), were only identified in 2% and 8%, respectively, of the bovine isolates. All but one PT2 and PT4 isolate carried either vtx2 alone or in combination with vtx2c, whereas none of the PT8 and PT14 isolates carried vtx2. The significant overlap between vtx/phage type combinations in bovine and human clinical isolates indicate that cattle are an important reservoir for human VTEC 0157 infections in Denmark. However, the vtx2-carrying isolates, causing the most severe clinical symptoms, constitute only a minor fraction of the isolates from the Danish bovine reservoir.

General information
State: Published
Organisations: Division of Microbiology and Risk Assessment, National Food Institute
Contributors: Roldgaard, B. B., Scheutz, F., Boel, J., Aabo, S., Schultz, A. C., Cheasty, T., Nielsen, E. M., Olsen, K. E. P., Christensen, B. B.
Pages: 255-259
Publication date: 2004
Peer-reviewed: Yes

Publication information
Journal: International Journal of Medical Microbiology
Volume: 294
Issue number: 4
ISSN (Print): 1438-4221
Ratings:
BFI (2018): BFI-level 1
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 1
Scopus rating (2017): CiteScore 3.59 SJR 1.717 SNIP 1.135
Web of Science (2017): Impact factor 3.298
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 1
Scopus rating (2016): CiteScore 3.65 SJR 1.766 SNIP 0.896
Web of Science (2016): Impact factor 3.391
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 3.31 SJR 1.811 SNIP 0.837
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 1
Scopus rating (2014): CiteScore 3.62 SJR 1.617 SNIP 0.951
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 1
Scopus rating (2013): CiteScore 4.26 SJR 1.921 SNIP 0.906
Web of Science (2013): Impact factor 3.42
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes
BFI (2012): BFI-level 1