Association between the porcine Escherichia coli F18 receptor genotype and phenotype and susceptibility to colonisation and postweaning diarrhoea caused by E-coli O138 : F18

Porcine postweaning Escherichia coli enteritis is a cause of significant morbidity and mortality in pigs worldwide, and effective prevention remains an unsolved problem. This study examined the correlation between susceptibility of pigs to experimental infection with an E. coli F18 strain and the porcine intestinal F18 receptor genotypes. Thirty-one pigs classified as either belonging to the susceptible or the resistant genotype were inoculated with cultures of an E. coli 0138:F18 isolated from a pig with postweaning diarrhoea. Susceptibility to colonisation and diarrhoea was assessed by clinical observations, faecal shedding of the challenge strain, histopathology and microscopic adhesion tests. Ten of 14 (71.4%) genetically susceptible pigs and one of 17 (5.9%) resistant pigs developed diarrhoea attributable to the challenge strain. There was no difference in susceptibility between homozygotic and heterozygotic susceptible pigs. Faecal shedding of the challenge strain correlated with the genetic receptor profile. Twenty pigs examined immunohistochemically revealed focal to extensive small intestinal mucosal colonisation by E. coli O138:F18 in nine of 10 susceptible and three of 10 resistant pigs. Results of in vitro adhesion assays performed with F18 cells on enterocyte preparations from 24 pigs, showed complete concordance with the F18 genotypes. In conclusion, this study showed a high correlation between the porcine intestinal F18 receptor genotypes and susceptibility to disease. However, pigs of the resistant F18 receptor genotype were not entirely protected against intestinal colonisation by E. coli F18.

General information
State: Published
Organisations: Section for Veterinary Diagnostics, Division of Veterinary Diagnostics and Research, National Veterinary Institute, Department of Informatics and Mathematical Modeling
Contributors: Frydendahl, K., Jensen, T. K., Andersen, J. S., Fredholm, M., Evans, G.
Pages: 39-51
Publication date: 2003
Peer-reviewed: Yes

Publication information
Journal: Veterinary Microbiology
Volume: 93
Issue number: 1
ISSN (Print): 0378-1135
Ratings:
Web of Science (2019): Indexed yes
BFI (2018): BFI-level 2
Web of Science (2018): Indexed yes
BFI (2017): BFI-level 2
Scopus rating (2017): CiteScore 2.7 SJR 1.175 SNIP 1.241
Web of Science (2017): Impact factor 2.524
Web of Science (2017): Indexed yes
BFI (2016): BFI-level 2
Scopus rating (2016): CiteScore 2.65 SJR 1.363 SNIP 1.206
Web of Science (2016): Impact factor 2.628
Web of Science (2016): Indexed yes
BFI (2015): BFI-level 2
Scopus rating (2015): CiteScore 2.56 SJR 1.413 SNIP 1.21
Web of Science (2015): Impact factor 2.564
Web of Science (2015): Indexed yes
BFI (2014): BFI-level 2
Scopus rating (2014): CiteScore 2.54 SJR 1.291 SNIP 1.256
Web of Science (2014): Impact factor 2.511
Web of Science (2014): Indexed yes
BFI (2013): BFI-level 2
Scopus rating (2013): CiteScore 3 SJR 1.459 SNIP 1.471
Web of Science (2013): Impact factor 2.726
ISI indexed (2013): ISI indexed yes
Web of Science (2013): Indexed yes