Monitoring of *stx2f* in food in the Netherlands

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100years
1918 — 2018

Background

APPLIED AND ENVIRONMENTAL MICROBIOLOGY, Mar. 2000, p. 1205–1208 Vol. 66, No. 3
0099-2240/00/$04.00+0

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ORIGIN

International Journal of Medical

UMM

Home / Eurosurveillance / Volume 19, Issue 17, 01/May/2014 / Article

Hoek *et al. BMC Genomics* (2019) 20:271
https://doi.org/10.1186/s12864-019-5635-z

BMC Genomics

Research articles

Emergence of Escherichia c
human Shiga toxin-producin
Netherlands, January 2008 t

I Friesema[1], K van der Zwaluw[1], T Schuurman[2], M K

Rita Prager, Angelika

RESEARCH ARTICLE Open Access

Check for updates

Comparative genomics reveals a lack of evidence for pigeons as a main source of stx_{2f}-carrying *Escherichia coli* causing disease in humans and the common existence of hybrid Shiga toxin-producing and enteropathogenic *E. coli* pathotypes

Angela H. A. M. van Hoek[1*], Janieke N. J. van Veldhuizen[1], Ingrid Friesema[1], Claudia Coipan[1], John W. A. Rossen[2], Indra L. Bergval[1] and Eelco Franz[1]

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100years 1918 — 2018

Background – The Netherlands

- 2015 – farm animal project – layers (chicken)
  - why not include *stx2f* screening?
  - and why not include *stx2f* in general monitoring
- Set-up method for *stx2f* (singleplex)
  - 2015 – for farm animal project
  - 2015 – for chicken meat monitoring
- Integrated multiplex *stx* screening
  - End of 2015 – general monitoring inclusive *stx2f*

Method

International Journal of Food Microbiology 151 (2011) 44–51

Contents lists available at ScienceDirect

International Journal of Food Microbiology

journal homepage: www.elsevier.com/locate/ijfoodmicro

A quantitative PCR assay for the detection and quantification of Shiga toxin-producing *Escherichia coli* (STEC) in minced beef and dairy products

S. Derzelle [a], A. Grine [a], J. Madic [a,b], C. Peytavin de Garam [a], N. Vingadassalon [a,b], F. Dilasser [a], E. Jamet [b], F. Auvray [a,*]

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- Derzelle - Multiplex PCR for detection of *stx1* and *stx2* – specific probe for *stx2f*
- Set-up (optimisation/validation/accreditation):
  - stx2f specific PCR based on primers and probe Derzelle
  - followed by: integrating in multiplex by substituting eae detection for stx2f

Screening *stx2f*

- 2015 May till October – 1479 screened – 14 positive (all poultry meat) – no isolates
- 2015 October till end – 1798 screened – no positive
- 2016 - 5625 screened – 27 positive – 2 isolates
    - 6 live stock (small ruminant), 10 fresh herbs, 1 ready to eat vegetable, 5 meat (bovine)
- 2017 – 5329 screened – 21 positive – 2 isolates
    - 3 fresh herbs, 9 ready to eat vegetables, 8 live stock (bovine), 1 exotic meat
- 2018 – 7212 screened – 9 positive – 2 isolates
    - 1 fresh herb, 5 ready to eat vegetables, 3 meat (bovine)

Screening *stx2f* positive total → 0.3%

Isolates

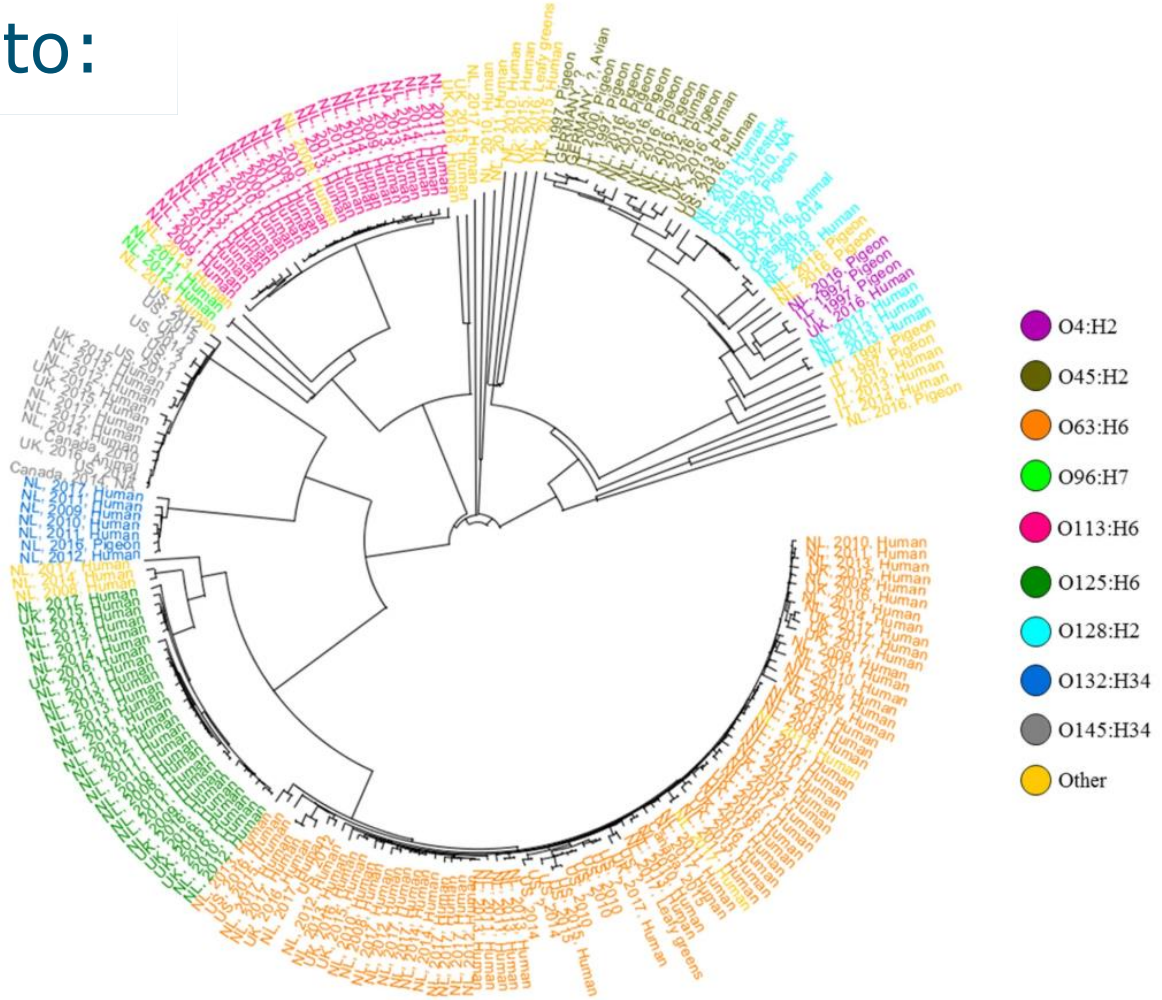
Date of sampling	Sample description	Serotype	stx gene	eae presence
14-10-2016	Sweet basil	Oont:H23		
4-11-2016	Live stock (goat)	O128:H2		
3-7-2017	Andive	O45:H2	stx2f	eae
31-8-2017	Spinach	O63:H6	stx2f	eae
16-5-2018	Mint	O128:H2	stx2f	
19-9-2018	Andive	O179:H8	stx2f	

Total STEC positive samples 0.03%

In 2017 – total STEC ~200 → ~ 3.5% of samples
In 2018 – total STEC ~280 → ~ 4 % of samples

Isolates related to:

- Van Hoek et al 2019



Conclusions

- Low prevalence of *stx2f* in food in the Netherlands
  - Highest for ready to eat vegetables and herbs
  - No clear link to biggest human isolate clades

- Screenings PCR from stx1-stx2-eae to stx1-stx2-stx2f to stx1-stx2-eae to stx1-stx2-???