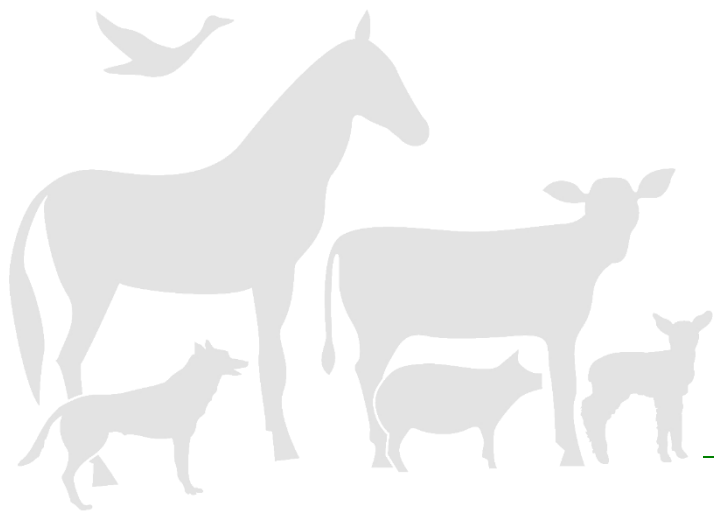




A five-year study on prevalence and characterization of VTEC in Poland



Introduction

- ❑ **Aim:** To assess contamination of carcasses of animals and meat intended for consumption by verotoxigenic *E. coli*
- ❑ **Type of samples:** swabs taken from the surface of carcasses in slaughterhouses and meat available at retail
- ❑ **Source of samples:** cattle, pigs and broilers as well as meat from these animals

Sampling and method

- ❑ The swabs were collected by Veterinary Inspection in slaughterhouses located in five selected provinces of Poland.
- ❑ After sending to the laboratory, VTEC identification was carried out according to ISO / TS 13136: 2012.



Results: carcasses – first real-time PCR

Year	Number of samples tested	Number (%) of positive results	Number of samples/positive (%) in the first real-time PCR		
			Cattle	Pigs	Broilers
2014	100	27 (27.0)	66/20 (30.3)	24/7 (29.2)	10/0
2015	100	25 (25.0)	66/21 (31.8)	24/4 (16.7)	10/0
2016	100	31 (31.0)	66/25 (37.9)	24/6 (25.0)	10/0
2017	100	35 (35.0)	66/22 (33.3)	24/13 (54.2)	10/0
2018	100	34 (34.0)	66/27 (40.9)	24/7 (29.2)	10/0
Total	500	152 (30.4)	330/115 (34.8)	120/37 (30.8)	50/0



Results: meat - first real-time PCR

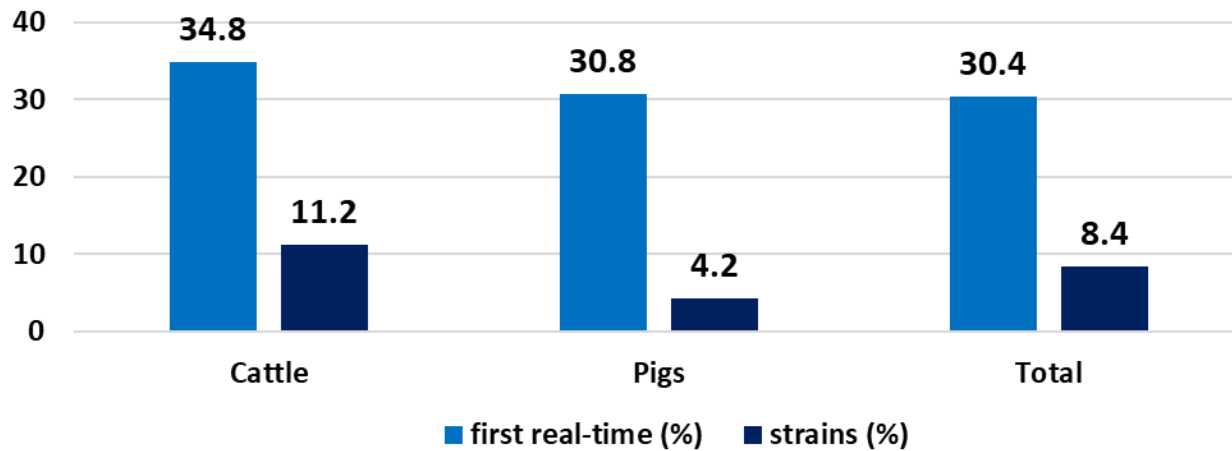
Year	Number of samples tested	Number (%) of positive results	Number of samples/positive (%) in the first real-time PCR		
			Beef	Pork	Chicken
2014	50	17 (34.0)	38/15 (39.5)	7/1 (14.3)	5/1 (20.0)
2015	50	10 (20.0)	38/9 (23.7)	7/1 (14.3)	5/0
2016	50	2 (4.0)	38/2 (5.3)	7/0	5/0
2017	50	3 (6.0)	38/3 (7.9)	7/0	5/0
2018	50	4 (8.0)	38/4 (10.5)	7/0	5/0
Total	250	36 (14.4)	190/33 (17.4)	35/2 (5.7)	25/1 (4.0)

Results: carcasses and meat – strains isolation

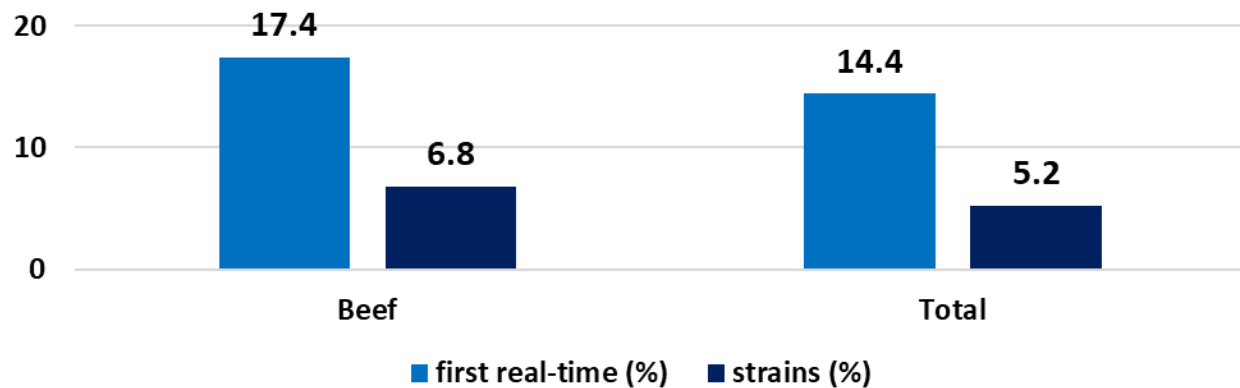
Year	Number of samples/number of strains (%) in the first real-time PCR				
	Carcasses		Meat		
	Cattle	Pig	Beef	Pork	Chicken
2014	20/4 (20.0)	7/1 (14.3)	15/7 (46.7)	1/0	1/0
2015	21/5 (23.8)	4/2 (50.0)	9/3 (33.3)	1/0	0
2016	25/7 (28.0)	6/1 (16.7)	2/0	0	0
2017	22/8 (36.4)	13/0	3/2 (66.7)	0	0
2018	27/13 (48.1)	7/1 (14.3)	4/1 (25.0)	0	0
Total	115/37 (32.2)	37/5 (13.5)	33/13 (39.4)	2/0	1/0

Results: carcasses and meat

Carcasses



Meat



Results – strains characteristic

Year (number of isolates)	Serogroup and genes of isolated VTEC		
	Carcasses		Meat (beef)
	Cattle	Pigs	
2014 (12)	O?; <i>stx2</i> ; <i>eaeA</i> (1 strain) O103 ; <i>stx2</i> (2 strains) O?; <i>stx2</i> (2 strains)	O145 ; <i>stx2</i> (1 strain)	O103 ; <i>stx2</i> (1 strain) O?; <i>stx2</i> (6 strains)
2015 (10)	O?; <i>stx2</i> (3 strains) O?; <i>stx1</i> ; <i>stx2</i> (2 strains)	O?; <i>stx2</i> (2 strains)	O?; <i>stx2</i> (3 strains)
2016 (8)	O?; <i>stx1</i> ; <i>stx2</i> (1 strain) O?; <i>stx2</i> (5 strains) O?; <i>stx2</i> ; <i>eaeA</i> (1 strain)	O?; <i>stx2</i> (1 strain)	
2017 (10)	O?; <i>stx2</i> (5 strains) O?; <i>stx1</i> ; <i>eaeA</i> (1 strain) O103 ; <i>stx1</i> ; <i>eaeA</i> (1 strain) O103 ; <i>stx1</i> ; <i>stx2</i> (1 strain)		O?; <i>stx2</i> (2 strains)
2018 (15)	O?; <i>stx2</i> (9 strains) O103 ; <i>stx1</i> ; <i>eaeA</i> (2 strains) O?; <i>stx1</i> ; <i>eaeA</i> (1 strain) O?; <i>stx1</i> ; <i>stx2</i> (1 strain)	O?; <i>stx2</i> (1 strain)	O?; <i>stx2</i> (1 strain)
Total (55)	<i>stx2</i> (26 strains); <i>stx2+eaeA</i> (2 strains); <i>stx1+stx2</i> (5 strains); <i>stx1+eaeA</i> (2 strains)	<i>stx2</i> (5 strains)	<i>stx2</i> (13 strains)

Final remarks

- ❑ 30.4% of carcasses (mainly of cattle) were positive for real-time PCR and VTEC were isolated from 8.4% of samples
- ❑ 14.4% of meat samples (mainly beef) were positive for real-time PCR and VTEC were isolated from 5.5% of samples
- ❑ All strains have been sequenced so further characteristics will be done (e.g. cgMLST, presence of additional virulence genes)
- ❑ Monitoring program is continued by next 5 years

Thank you for your attention

