Detection and characterization of *Clostridioides difficile* isolated from animals in France

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Introduction

Clostridioides difficile infection (CDI) is a major cause of nosocomial diarrhea in adults, and has also been increasingly reported in the community in the past decade worldwide. Several reservoirs of *C. difficile* strains (animals, food and environment) have been suggested. While surveys have been conducted in several countries to evaluate the prevalence of *C. difficile* in these reservoirs, little data is available in France, in particular in animals.
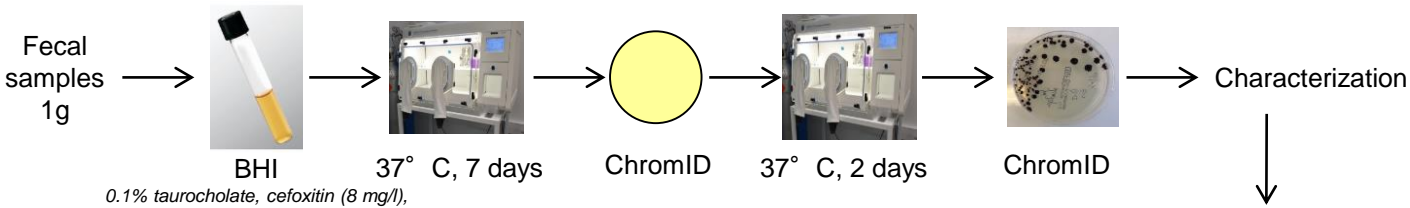
Objective: to undertake an initial survey of animal fecal samples in France
➲ *to evaluate the presence of C. difficile*
➲ *to characterize isolates.*

Materials and Methods

1033 samples: including 130 bovine, 567 pig, 83 pet, 190 poultry fecal samples and 63 other animal samples
(130 farms) (44 farms) (74 owners) (21 farms)

Fecal samples 1g → BHI → 37° C, 7 days → ChromID → 37° C, 2 days → ChromID → Characterization

0.1% taurocholate, cefoxitin (8 mg/l), cycloserine (250 mg/l)

Protocol used for the detection of *C. difficile* in fecal samples
(According to the method described in DOI: 10.1002/mbo3.872)

tpi, tcdA, tcdB, tcdC, cdtA, cdtB, lok

- PCR-Ribotype (RT)
- PCR multiplex
- Antimicrobial susceptibility assays
  (by the disk diffusion method according to the CA-SFM 2013)

Results

Animal species	% positive	No. isolates	RT	tcdA	tcdB	cdtA/B	Erythromycin	Clindamycin	Moxifloxacin	Tetracycline	Vancomycin	Metronidazole
(> 6 months)	0%	0	/	/	/	/						
(piglets, sows and pigs)	25.6 %	66	078 126 014 005	100 %	100 %	95 %	14 %	3 %	80 %	12 %	100 %	
(broilers)	26.3 %	21	FR AI-21/0 713 481 452 446 422 131 087 261 001 003 005 015 020	100 %	100 %	9%	100 %	5 %	76 %	90 %	100 %	
(dogs,cats, others)	6 %	3	106 014 033	100 %	67 %	33%	100 %	33 %	100 %	100 %	100 %	
Others	3.5 %	9	660 126 014 005	100 %	67%	78 %	56 %	0 %	100 %	67 %	100 %	

% of antimicrobial susceptibility

Conclusion

This study, which is the first one conducted in France in animals provides an overview of RT and toxin genes profiles as well as antimicrobial susceptibilities of *C. difficile* isolates in animal faeces. As reported in previous studies conducted in other European countries, it shows that animals are significant reservoirs of *C. difficile* strains, including RT commonly involved in human CDI.

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