

Table 1. Toxinotypes – characteristics

Toxinotype	Type strain	Toxin production ^a	B1 ^b	A3 ^b	Type of <i>tcdC</i> gene ^c	Type of CPE ^d	Reference (first description)	Remarks
0	VPI 10463	A ⁺ B ⁺ CDT ⁻	1	1	1	D	Rupnik et al., J.Clin.Microb., 1998	
I	EX 623	A ⁺ B ⁺ CDT ⁻	1	4	1	D	Rupnik et al., J.Clin.Microb., 1998	
II	AC 008	A ⁺ B ⁺ CDT ⁻	1	3	1	D	Rupnik et al., J.Clin.Microb., 1998	
IIIa	SE 844	A ⁺ B ⁺ CDT ⁺	4	2	2	D		differences in RFLP of B2 and B3 fragments
IIIb	R 12087	A ⁺ B ⁺ CDT ⁺	4	2	2	D		
IIIc	CH6230	A ⁺ B ⁺ CDT ⁺	4	2	3	D		
IV	55767	A ⁺ B ⁺ CDT ⁺	2	2	4	D	Rupnik et al., J.Clin.Microb., 1998	
V	SE 881	A ⁺ B ⁺ CDT ⁺	3	8	3	D	Rupnik et al., J.Clin.Microb., 1998	very similar to types VI and VII in all <i>tcd</i> fragments except in A3
V-like	CH4380	A ⁻ B ⁺ CDT ⁺	3	8	nd	D	Geric et al., J.Clin.Microb., 2003	A ⁻ B ⁺ strain, whereas toxinotype V is A ⁺ B ⁺
VI	51377	A ⁺ B ⁺ CDT ⁺	3	5 d	3	D	Rupnik et al., J.Clin.Microb., 1998	very similar to types V and VII in all <i>tcd</i> fragments except in A3
VII	57267	A ⁺ B ⁺ CDT ⁺	3	6 d	3	D	Rupnik et al., J.Clin.Microb., 1998	very similar to types V and VI in all <i>tcd</i> fragments except in A3
VIII	1470	A ⁻ B ⁺ CDT ⁻	5	7 d	1	S	Rupnik et al., J.Clin.Microb., 1998	
IX	51680	A ⁺ B ⁺ CDT ⁺	5	2	1	S	Rupnik et al., J.Clin.Microb., 1998	same as toxinotype IX in B1 and A3 RFLP in XXIII longer A1 due to the presence of ISTRon difference also in B3 fragment
X	8864	A ⁻ B ⁺ CDT ⁺	5	neg	neg	S	Rupnik et al., J.Clin.Microb., 1998	same as toxinotype XVII in B1 and A3 RFLP in XVII longer A1 due to the presence of ISTRon no insertion in PL3 in XVII
XIa	IS 58	A ⁻ B ⁻ CDT ⁺	neg	5d	3	D	Rupnik et al., Microbiology, 2001	
XIb	R 11402	A ⁻ B ⁻ CDT ⁺	neg	8	3	D	Rupnik et al., Microbiology, 2001	
XII	IS 25	A ⁺ B ⁺ CDT ⁻	6	1	1	D	Rupnik et al., Microbiology, 2001	
XIII	R 9367	A ⁺ B ⁺ CDT ⁻	1	9	1	D	Rupnik et al., Microbiology, 2001	

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XIV	R 10870	A ⁺ B ⁺ CDT ⁺	7	2	3	S	Rupnik et al., Microbiology, 2001	same as toxinotype XV in B1 and A3 RFLP check A1 for presence of insertion (present in XIV)
XV	R 9385	A ⁺ B ⁺ CDT ⁺	7	2	2	S	Rupnik et al., Microbiology, 2001	same as toxinotype XIV in B1 and A3 RFLP check A1 for presence of insertion (absent in XV)
XVI	SUC36	A ⁻ B ⁺ CDT ⁺	3	10d	3	D	Rupnik et al., J.Clin.Microb., 2003	
XVII	J9965	A ⁻ B ⁺ CDT ⁺	5	neg	neg	S	Rupnik et al., J.Clin.Microb., 2003	same as toxinotype X in B1 and A3 RFLP in XVII longer A1 due to the presence of ISTRon no insertion in PL3 in XVII
XVIII	K095	A ⁺ B ⁺ CDT ⁻	1	11d	1	D	Rupnik et al., J.Clin.Microb., 2003	
XIX	TR13	A ⁺ B ⁺ CDT ⁻	1	5d	1	D	Rupnik et al., J.Clin.Microb., 2003	
XX	TR14	A ⁺ B ⁺ CDT ⁻	1	6d	1	D	Rupnik et al., J.Clin.Microb., 2003	
XXI	CH6223	A ⁺ B ⁺ CDT ⁻	5	1	1	S	Geric et al., J.Med.Microbiol., 2004	new type of A2 in orig. publication B1 described as type 4
XXII	CD07-468	A ⁺ B ⁺ CDT ⁺	4	1	1	D	Geric et al., J.Med.Microbiol., 2004	ISTRon in A1 new type of B2 in orig. publication B1 described as type 5
XXIII	8785	A ⁺ B ⁺ CDT ⁺	5	2	1	S	Geric, PhD Thesis, 2004	same as toxinotype IX in B1 and A3 RFLP in XXIII longer A1 due to the presence of ISTRon difference also in B3 fragment
XXIV	597B	A ⁺ B ⁺ CDT ⁺	1	1	2	D	Geric, PhD Thesis, 2004	variant <i>tcdC</i> gene presence of binary toxin genes, which is unusual for strain with VPI like <i>tcd</i> genes
XXV	7325	A ⁺ B ⁺ CDT ⁺	4	12	2	nd	unpublished	
XXVI	7459	A ⁺ B ⁺ CDT ⁻	1	13	1	nd	unpublished	
XXVII	KK2443/2006	A ⁺ B ⁺ CDT ⁻	1	14	1	nd	unpublished	
XXVIII	CD08-070	A ⁺ B ⁺ CDT ⁺	3	15d	3	nd	unpublished	
XXIX	CD07-140	A ⁺ B ⁺ CDT ⁻	1	16d	1	nd	unpublished	
XXX	ES 130	A ⁻ B ⁺ CDT ⁺	8	neg	neg	nd	Elliott et al. J. Med. Microbiol., 2011	new B1 type, B2 and B3 same as toxinotype IV, <i>tcdA</i> neg., PL3 neg.

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XXXI	WA 151	A ⁻ B ⁺ CDT ⁺	5	neg	neg	nd	Elliott et. al. J. Med. Microbiol., 2011	same as toxinotypes X and XVII in B1 and A3 RFLP in XXXI neg A1 and PL3 (both positive in X and XVII)

neg - not amplified, d – deletion (detected already in unrestricted A3 PCR fragment)

a – A⁺ and B⁺ refers to production of toxin TcdA and TcdB; CDT⁺ refers to the presence of complete CDT locus (production of binary toxin not tested for all strains)

b – types of *Hinc/Acc* restrictions for B1 PCR fragment and types of *EcoRI* restrictions for A3 PCR fragment

c – type of *NcoI* restriction type of *tcdC* gene indicating deletions of different lengths (according to Geric B., PhD Thesis, Ljubljana 2004); see also Geric Stare B., Delmee M., Rupnik M., J. Med. Microbiol., 2007, 56: 329-335 and Spigaglia and Mastrantonio, J. Clin. Microbiol., 2002, 40: 3470-3475.

d – CPE – cytopathic effect of strain supernatant on cultured cells; reference strain VPI 10463 and some variant toxinotypes caused cell rounding with remaining long protrusions (D or difficile type of CPE), while some variant toxinotypes cause complete cell rounding, similar as TcsL produced by *C. sordellii* (S or sordellii type)

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