

Supplemental Table 1A. Peak time of fibrin formation time with various APTT reagents

FVIII	1.00 IU (sec)	0.50 IU (sec)	0.10 IU (sec)	0.05 IU (sec)	0.01 IU (sec)	0.005 IU (sec)	0.001 IU (sec)
A	36.2 (35.9-36.6)	43.3 (41.1-43.4)	68.4 (68.4-68.6)	80.7 (80.4-83.1)	110 (110-110)	112 (112-132)	Error
B	32.6 (32.4-32.8)	40.3 (40.0-40.4)	57.6 (57.5-58.1)	65.8 (65.5-66.9)	85.4 (85.1-86.7)	102 (101-102)	111 (110-111)
C	31.6 (31.5-31.9)	38.6 (38.5-38.8)	60.6 (60.0-61.0)	70.6 (70.6-72.5)	96.0 (95.6-96.6)	102 (101-102)	104 (104-104)
D	29.7 (29.6-30.0)	34.6 (34.5-34.6)	50.4 (50.3-51.0)	58.3 (58.0-59.6)	81.9 (81.4-82.9)	89.9 (89.9-90.2)	97.2 (96.9-97.7)
E	33.9 (33.0-34.0)	46.6 (46.6-47.0)	76.6 (76.5-77.1)	91.2 (90.7-92.1)	134 (134-135)	Error	Error
F	31.0 (30.4-31.2)	37.7 (37.5-38.2)	56.4 (56.0-57.3)	65.6 (65.0-67.1)	89.4 (88.5-89.8)	97.0 (96.5-97.1)	Error
G	26.9 (26.8-27.1)	33.9 (33.8-34.0)	51.3 (51.2-51.4)	60.6 (60.5-61.4)	83.2 (82.8-83.9)	91.6 (91.3-92.2)	98.8 (98.7-98.9)
H	28.9 (28.9-29.3)	36.9 (36.9-37.0)	58.1 (57.8-58.4)	68.2 (68.1-69.1)	89.5 (89.3-90.0)	94.2 (94.0-94.5)	97.1 (97.0-97.5)
I	28.8 (28.7-29.2)	37.3 (37.2-37.5)	61.3 (61.2-61.4)	72.3 (72.2-72.9)	97.7 (97.5-97.9)	102 (102-102)	133 (125-134)
J	29.4 (29.2-30.0)	36.0 (35.9-36.4)	56.0 (55.6-56.2)	65.0 (64.9-65.2)	88.1 (87.6-88.5)	94.4 (93.9-94.4)	99.2 (98.9-99.4)
K	28.4 (28.2-29.0)	36.0 (36.0-36.2)	61.2 (61.1-61.6)	73.0 (72.7-73.1)	98.0 (97.3-98.2)	103 (103-103)	105 (105-105)
L	36.6 (36.4-36.6)	45.6 (45.3-45.6)	68.7 (68.7-71.5)	80.8 (80.3-82.3)	105 (105-107)	108 (108-130)	111 (111-112)

Supplemental Table 1B. The 1stDPT with various APTT reagents

FVIII	1.00 IU (sec)	0.50 IU (sec)	0.10 IU (sec)	0.05 IU (sec)	0.01 IU (sec)	0.005 IU (sec)	0.001 IU (sec)
A	35.0 (34.7-35.3)	42.3 (40.3-42.4)	67.6 (67.6-67.9)	79.9 (79.5-82.3)	115 (115-117)	120 (120-128)	Error
B	31.8 (31.7-31.9)	39.4 (39.2-39.4)	55.5 (55.4-55.8)	62.6 (62.4-63.6)	84.9 (84.4-85.8)	93.7 (93.5-94.0)	112 (111-112)
C	30.6 (30.5-30.9)	37.8 (37.7-38.0)	60.2 (59.7-60.8)	70.3 (70.2-72.1)	96.4 (95.7-97.2)	105 (105-106)	120 (119-120)
D	28.6 (28.5-28.9)	33.7 (33.5-33.7)	49.3 (49.2-49.8)	56.8 (56.6-58.1)	80.3 (79.0-81.3)	89.3 (88.9-90.0)	111 (110-112)
E	32.9 (32.1-33.0)	45.2 (45.2-45.5)	73.4 (73.1-73.9)	91.0 (90.4-92.0)	134 (134-135)	Error	Error
F	30.4 (29.7-30.5)	36.7 (36.6-37.2)	53.9 (53.6-54.7)	61.4 (61.1-62.9)	79.5 (78.8-83.4)	86.7 (86.0-89.8)	Error
G	26.3 (26.2-26.5)	33.3 (33.2-33.4)	50.4 (50.2-50.4)	59.3 (59.1-60.0)	81.0 (80.5-81.6)	91.3 (90.9-93.9)	113 (112-114)
H	28.2 (28.2-28.7)	36.2 (36.2-36.2)	56.8 (56.5-57.1)	66.4 (66.3-67.3)	87.8 (87.3-88.3)	95.2 (94.7-95.6)	109 (108-110)
I	28.6 (28.5-29.0)	37.1 (37.0-37.3)	60.8 (60.7-60.8)	71.5 (71.4-72.0)	99.0 (98.7-99.2)	110 (109-110)	120 (119-121)
J	28.9 (28.7-29.4)	35.5 (35.2-35.7)	54.5 (54.0-54.7)	63.0 (62.8-63.3)	86.1 (85.3-86.3)	94.7 (94.6-95.3)	114 (113-116)
K	28.0 (27.8-28.6)	35.7 (35.6-35.8)	60.5 (60.5-61.0)	72.1 (72.0-72.3)	98.2 (97.3-98.3)	108 (108-109)	120 (120-120)
L	35.3 (35.2-35.3)	44.7 (44.3-45.8)	68.3 (68.2-71.0)	80.3 (79.9-81.9)	114 (111-117)	120 (119-127)	120 (119-129)

Supplemental Table 1C. The 1st DPH with various APTT reagents

FVIII	1.00 IU (mAbs)	0.50 IU (mAbs)	0.10 IU (mAbs)	0.05 IU (mAbs)	0.01 IU (mAbs)	0.005 IU (mAbs)	0.001 IU (mAbs)
A	281 (278-286)	264 (252-265)	197 (195-198)	168 (163-168)	105 (101-107)	75.5 (73.5-88.2)	60.8 (50.0-61.8)
B	229 (226-230)	207 (207-209)	156 (154-157)	134 (130-135)	93.8 (90.1-94.7)	67.6 (66.9-67.8)	44.7 (43.8-45.1)
C	281 (278-282)	249 (247-250)	178 (177-180)	153 (150-155)	99.5 (96.5-100)	84.1 (83.6-84.9)	61.2 (60.8-61.3)
D	234 (230-235)	216 (216-217)	160 (158-160)	136 (132-137)	86.4 (82.4-87.1)	70.4 (70.2-71.2)	48.5 (48.1-49.1)
E	234 (227-236)	197 (197-199)	130 (128-130)	108 (105-109)	71.7 (68.8-72.4)	Error	Error
F	176 (168-192)	156 (151-177)	115 (106-127)	93.0 (87.7-1-6)	53.7 (51.6-67.0)	43.6 (41.3-52.2)	Error
G	338 (329-340)	286 (284-286)	192 (191-193)	159 (157-160)	102 (99.4-102)	84.5 (83.8-85.6)	58.8 (58.7-59.7)
H	285 (272-288)	243 (242-244)	164 (163-166)	136 (134-137)	88.3 (84.6-89.2)	74.1 (73.5-74.5)	54.5 (53.7-54.9)
I	301 (291-312)	264 (264-265)	176 (174-176)	145 (143-145)	90.4 (89.0-91.3)	75.3 (74.1-76.3)	51.2 (50.2-53.2)
J	293 (278-298)	250 (247-253)	167 (166-168)	139 (138-140)	91.8 (91.5-95.2)	78.0 (76.6-78.3)	56.4 (56.1-57.5)
K	333 (323-341)	300 (299-301)	199 (198-200)	164 (163-165)	106 (105-117)	88.8 (88.4-89.3)	65.8 (65.3-66.5)
L	244 (241-247)	204 (203-206)	142 (141-144)	124 (122-126)	81.5 (81.1-83.2)	69.1 (66.0-71.4)	30.1 (28.7-35.5)

[APTT reagents] A, APTT-SP; B, APTT-SS; C, STA Cephascreen; D, Coagpia APTT-N; E, APTT PSL; F, C.K. Prest; G, APTT-SLA; H, TC APTT; I, APTT FS; J, APTT FSL; K, PTT ACT; L, STA PTT A

[Abbreviations] HemosIL APTT-SP; APTT-SP and HemosIL SynthASil; APTT-SS (Instrumentation Laboratory), STA Cephascreen; STA Cephascreen, D, STA PTT Automate; STA PTT A and C.K. Prest (Diagnostica Stago S.A.S), Coagpia APTT-N; APTT-N (SEKISUI MEDICAL CO., LTD.), Thrombocheck APTT-SLA; APTT-SLA and Thrombocheck APTT; TC APTT (Sysmex Corporation) and Dade[®] Actin[®] FS Activated PTT Reagent; APTT FS, Dade[®] Actin[®] FSL Activated PTT Reagent; APTT FSL, Dade[®] Actin[®] FSL Activated Cephaloplastin Reagent; APTT ACT and Pathromtin[®] SL; APTT PSL (Siemens Healthcare Diagnostics Products GmbH).

1stDPT, first derivative peak time; 1stDPH, first derivative peak height; FVIII, coagulation factor FVIII

Supplemental Table 2A. The 1st DPT of Kovaltry[®] and Jivi[®], measured with various APTT reagents

FVIII	FVIII	1.00 IU (sec)	0.50 IU (sec)	0.10 IU (sec)	0.05 IU (sec)	0.01 IU (sec)	0.005 IU (sec)	0.001 IU (sec)
A	Kovaltry [®]	36.3±0.6	44.7±0.3	70.5±1.2	81.7±1.2	117.0±0.5	120.6±1.4	161.6±1.9
	Jivi [®]	68.6±2.2	84.8±4.6	116.4±3.4	140.3±1.2	176.5±2.3	172.3±6.1	171.7±6.3
B	Kovaltry [®]	30.9±0.4	38.0±0.4	53.1±0.2	61.0±0.4	82.8±1.1	91.9±0.7	111.4±1.6
	Jivi [®]	28.9±0.3	36.2±0.9	52.5±0.8	60.7±0.3	60.7±0.3	90.6±0.5	109.4±0.6
C	Kovaltry [®]	33.5±1.0	38.5±0.3	61.4±1.0	71.1±0.6	94.4±1.5	104.5±1.0	119.6±0.1
	Jivi [®]	30.4±0.4	37.0±0.6	59.1±0.7	70.5±0.4	94.7±0.8	102.1±4.0	119.4±0.2
D	Kovaltry [®]	28.5±0.4	33.4±0.4	48.6±0.7	56.7±0.2	80.6±0.4	90.0±0.7	118.2±1.7
	Jivi [®]	27.2±0.1	32.6±1.1	48.0±0.8	57.0±0.8	78.3±0.8	90.6±1.4	117.8±5.3
E	Kovaltry [®]	40.1±1.2	48.6±0.2	75.9±1.4	95.7±0.8	134.5±1.8	Error	Error
	Jivi [®]	42.4±0.7	54.5±1.9	81.4±1.1	101.8±0.3	151.3±0.9	Error	Error
F	Kovaltry [®]	31.6±1.1	37.9±0.9	54.2±1.5	61.9±0.1	79.7±0.4	87.3±0.9	95.8±3.4
	Jivi [®]	36.2±0.8	44.0±0.5	55.0±1.3	62.4±0.8	81.9±1.3	88.3±1.0	97.1±2.0
G	Kovaltry [®]	26.5±0.4	33.7±0.4	50.2±0.6	59.7±0.6	81.8±0.4	92.3±0.9	114.6±0.6
	Jivi [®]	25.0±0.4	32.3±0.5	48.3±0.5	55.1±0.4	78.1±0.6	88.4±1.7	108.4±2.5
H	Kovaltry [®]	30.4±0.4	38.2±1.4	57.6±0.4	68.3±0.6	88.4±0.1	97.7±1.0	111.1±3.2
	Jivi [®]	28.1±0.6	35.6±0.7	57.7±0.7	65.9±0.7	86.4±0.6	97.3±0.4	106.5±3.6
I	Kovaltry [®]	32.1±0.4	40.2±0.7	62.6±0.7	73.5±0.9	99.8±1.3	111.5±2.7	122.6±2.6
	Jivi [®]	27.6±1.2	35.2±0.5	55.7±0.7	67.4±0.8	91.5±1.9	107.4±3.4	120.9±2.2
J	Kovaltry [®]	28.2±0.3	34.1±0.8	53.8±1.2	62.9±1.0	86.1±1.5	94.4±0.8	115.1±0.4
	Jivi [®]	27.0±0.2	31.6±0.6	51.6±0.8	60.6±0.5	83.0±1.6	92.5±1.3	112.3±3.1
K	Kovaltry [®]	34.1±0.4	42.9±0.5	62.6±0.2	74.0±0.4	99.8±1.3	111.5±2.7	119.6±0.1
	Jivi [®]	27.9±0.2	35.4±1.3	59.7±0.4	70.1±0.5	96.8±1.4	107.4±3.4	114.2±5.0
L	Kovaltry [®]	35.6±0.6	44.4±1.1	68.0±0.8	80.9±0.3	110.2±2.3	120.3±1.2	150.7±1.1
	Jivi [®]	74.9±1.7	90.6±0.7	115.4±3.9	129.4±1.0	136.9±0.5	146.0±1.7	148.0±1.0

Supplemental Table 2B. The 1stDPH of Kovaltry® and Jivi®, measured with various APTT reagents

FVIII	FVIII	1.00 IU (mAbs)	0.50 IU (mAbs)	0.10 IU (mAbs)	0.05 IU (mAbs)	0.01 IU (mAbs)	0.005 IU (mAbs)	0.001 IU (mAbs)
A	Kovaltry®	290.4±6.1	264.7±4.1	199.2±2.2	170.3±3.7	107.7±1.8	75.8±39.6	55.9±4.4
	Jivi®	149.3±3.8	116.1±14.1	69.7±3.5	64.1±1.5	54.2±2.1	39.6±0.8	19.6±0.6
B	Kovaltry®	230.1±1.9	208.7±4.8	160.9±7.1	138.7±3.2	99.3±5.2	69.3±5.3	57.5±2.8
	Jivi®	250.8±3.7	221.1±1.6	172.2±2.5	144.5±1.1	102.9±4.8	72.8±3.9	60.6±3.0
C	Kovaltry®	285.4±3.8	252.9±4.0	183.3±1.9	157.5±5.3	101.2±6.1	88.4±0.1	63.0±0.9
	Jivi®	304.5±3.2	269.4±6.7	193.6±6.3	165.7±1.2	103.2±4.9	86.7±2.1	63.2±0.4
D	Kovaltry®	251.2±6.2	226.2±8.2	165.9±1.3	140.9±2.2	90.2±2.0	75.5±0.5	48.2±0.4
	Jivi®	263.9±11.4	232.8±1.3	177.4±2.2	150.2±0.6	91.3±1.4	77.9±2.9	52.4±1.2
E	Kovaltry®	231.3±5.0	199.3±3.4	137.1±5.9	109.5±0.6	75.5±0.7	Error	Error
	Jivi®	243.4±4.7	208.5±6.7	153.4±4.5	125.1±6.0	86.2±4.9	Error	Error
F	Kovaltry®	176.0±2.5	160.2±8.4	121.0±8.2	98.5±3.8	56.7±1.2	48.8±0.8	36.9±2.6
	Jivi®	189.4±2.7	157.1±4.4	123.3±3.0	103.2±6.1	61.7±4.4	54.9±3.7	36.7±1.7
G	Kovaltry®	346.4±4.6	301.0±4.2	203.6±5.0	163.6±2.7	106.7±0.2	86.0±5.2	61.2±1.1
	Jivi®	359.8±2.2	328.8±2.9	223.7±1.1	173.8±3.6	118.8±7.9	95.4±4.1	65.9±3.8
H	Kovaltry®	285.1 ±2.3	245.1±1.7	166.3±1.4	140.8±6.9	89.3±2.7	75.3±1.2	53.2±1.7
	Jivi®	301.0±1.6	265.8±2.5	187.4±7.0	157.0±2.7	104.3±4.9	82.1±3.3	60.3±0.6
I	Kovaltry®	303.0±3.5	266.0±4.6	184.2±0.8	146.2±1.0	98.8±0.8	79.4±1.0	58.5±0.9
	Jivi®	320.0±6.4	278.7±4.2	198.5±4.9	161.6±3.2	111.8±1.7	86.8±1.8	62.2±1.3
J	Kovaltry®	301.5±5.4	267.9±5.7	173.2±0.3	142.8±2.8	94.6±1.9	79.3±0.9	57.6±0.8
	Jivi®	313.5±4.3	282.3±1.6	186.6±1.7	155.5±3.7	103.7±1.6	86.9±2.1	62.3±0.7
K	Kovaltry®	341.9±2.3	307.9±3.5	207.3±2.1	173.6±3.6	111.8±3.4	95.0±0.7	73.8±5.9
	Jivi®	369.7±2.9	332.0±1.6	217.1±4.7	185.3±4.3	129.7±3.8	105.3±2.9	81.7±3.1
L	Kovaltry®	249.3±3.2	208.7±3.7	158.1±3.6	125.6±1.1	86.3±2.9	67.5±7.9	38.1±4.5
	Jivi®	149.4±4.6	116.7±6.5	84.0±6.4	67.4±1.9	40.6±4.9	27.1±1.7	22.9±2.2

[APTT reagents] A, APTT-SP; B, APTT-SS; C, STA Cephascreen; D, Coagpia APTT-N; E, APTT PSL; F, C.K. Prest; G, APTT-SLA; H, TC APTT; I, APTT FS; J, APTT FSL; K, PTT ACT; L, STA PTT A

[Abbreviations] HemosIL APTT-SP; APTT-SP and HemosIL SynthASil; APTT-SS (Instrumentation Laboratory), STA Cephascreen; STA Cephascreen, D, STA PTT Automate; STA PTT A and C.K. Prest (Diagnostica Stago S.A.S), Coagpia APTT-N; APTT-N (SEKISUI MEDICAL CO., LTD.), Thrombocheck APTT-SLA; APTT-SLA and Thrombocheck APTT; TC APTT (Sysmex Corporation) and Dade® Actin® FS Activated PTT Reagent;

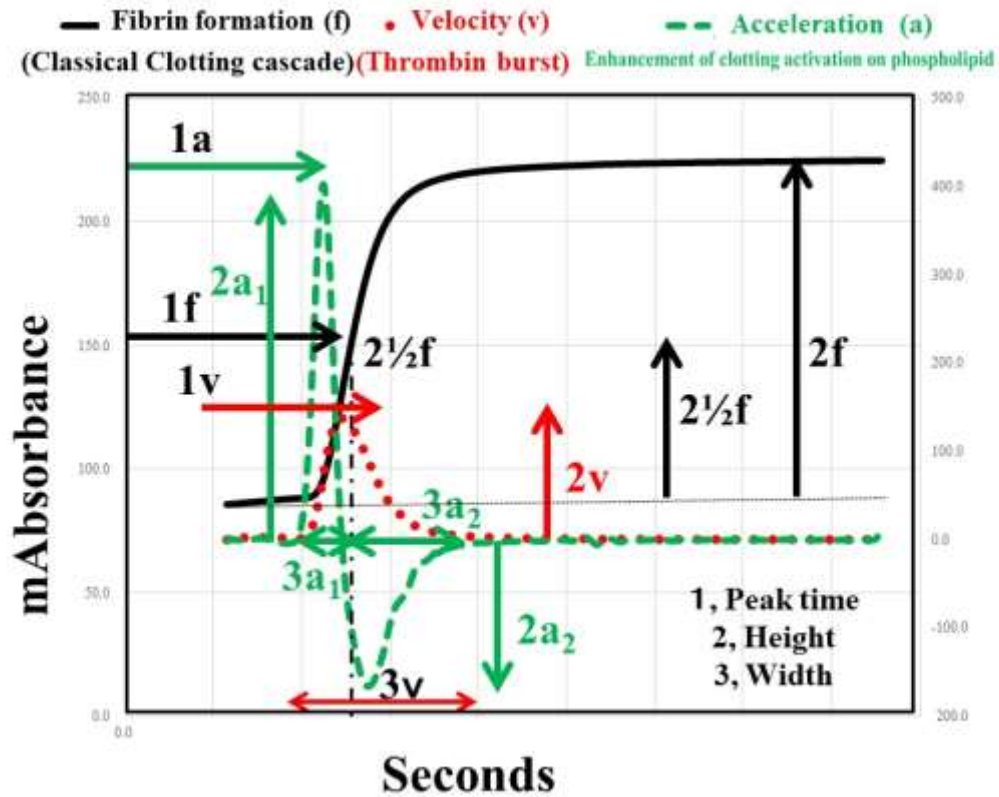
APTT FS, Dade[®] Actin[®] FSL Activated PTT Reagent; APTT FSL, Dade[®] Actin[®] FSL Activated Cephaloplastin Reagent; APTT ACT and Pathromtin[®] SL; APTT PSL (Siemens Healthcare Diagnostics Products GmbH).

1stDPT, first derivative peak time; 1stDPH, first derivative peak height; FVIII, coagulation factor FVIII

Supplemental Table 3. FVIII concentrations in normal plasma, Kovaltry® and Jivi®, and 1st DPT and 1st DPH in the sTF/FIX assay

	FVIII	1.00 IU	0.50 IU	0.10 IU	0.05 IU	0.01 IU	0.005 IU
1 st DPT (sec)	Normal plasma	105.1±3.7	113.5±2.0	120.8±0.5	125.7±0.9	131.4±1.1	140.8±2.5
	Kovaltry®	107.1 ±1.6	114.7±2.6	119.8±1.3	124.7±0.6	131.0±1.0	137.0±1.0
	Jivi®	106.9±1.5	113.7±1.5	118.7±0.6	122.0±1.0	129.3±0.6	136.7±1.2
1 st DPH (mabs)	Normal plasma	44.4±0.7	39.0±0.7	33.4±0.5	30.9±0.4	28.9±0.2	27.0±0.6
	Kovaltry®	45.2±0.5	38.9±0.5	32.8±0.4	30.5±0.2	28.6±0.5	27.9±0.2
	Jivi®	46.4±0.4	41.3±0.6	35.4±0.3	32.4±0.3	30.2±0.3	28.3±0.4

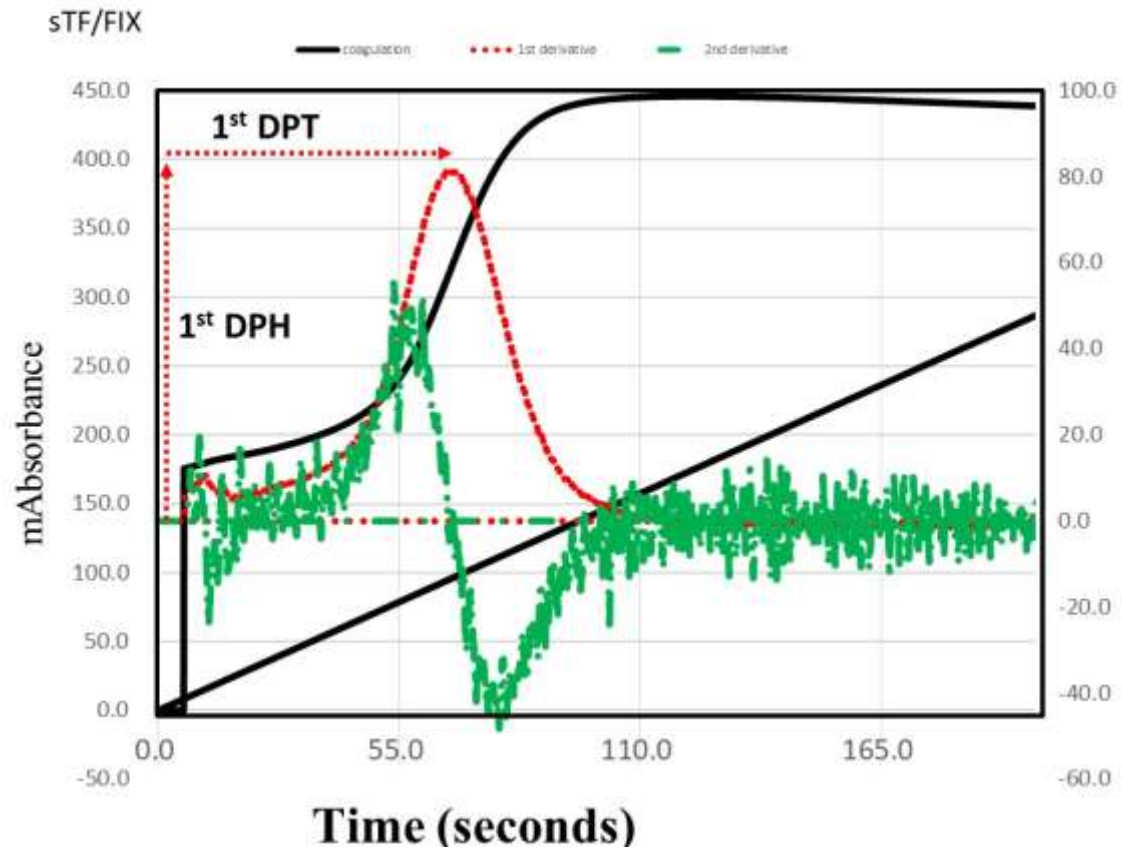
1st DP, first derivative peak; 1st DPT, 1st DP time; 1st DPH, 1st DP height; FVIII, coagulation factor FVIII.



Supplemental Figure 1. Parameters of the CWA (APTT)

CWA, clot waveform analysis; APTT, activated partial thromboplastin time;

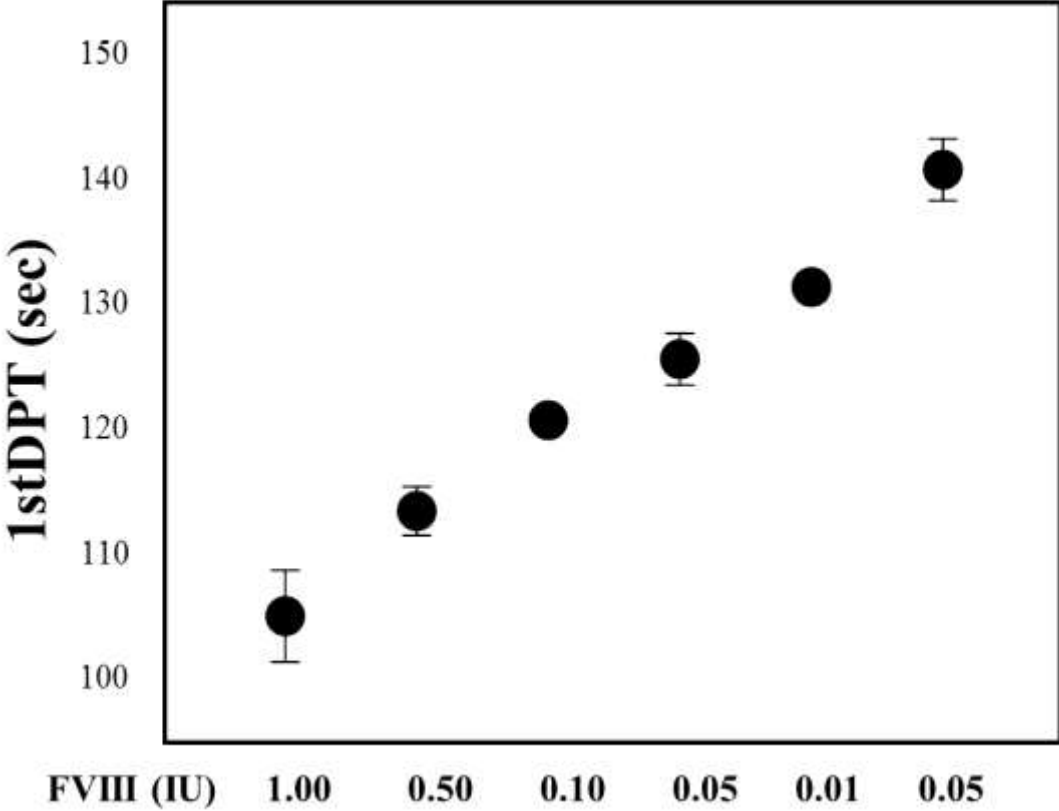
F, fibrin formation curve; v, velocity (1st derivative curve; DC); a, acceleration (2nd derivative curve, DC), 1, peak time; 2, peak height; 3, peak width.



Supplemental Figure 2. Parameters of sTF/FIX

1st DPT, first derivative peak time; 1st DPH, first derivative peak height.

Supplementary Figure 3A



Supplementary Figure 3B

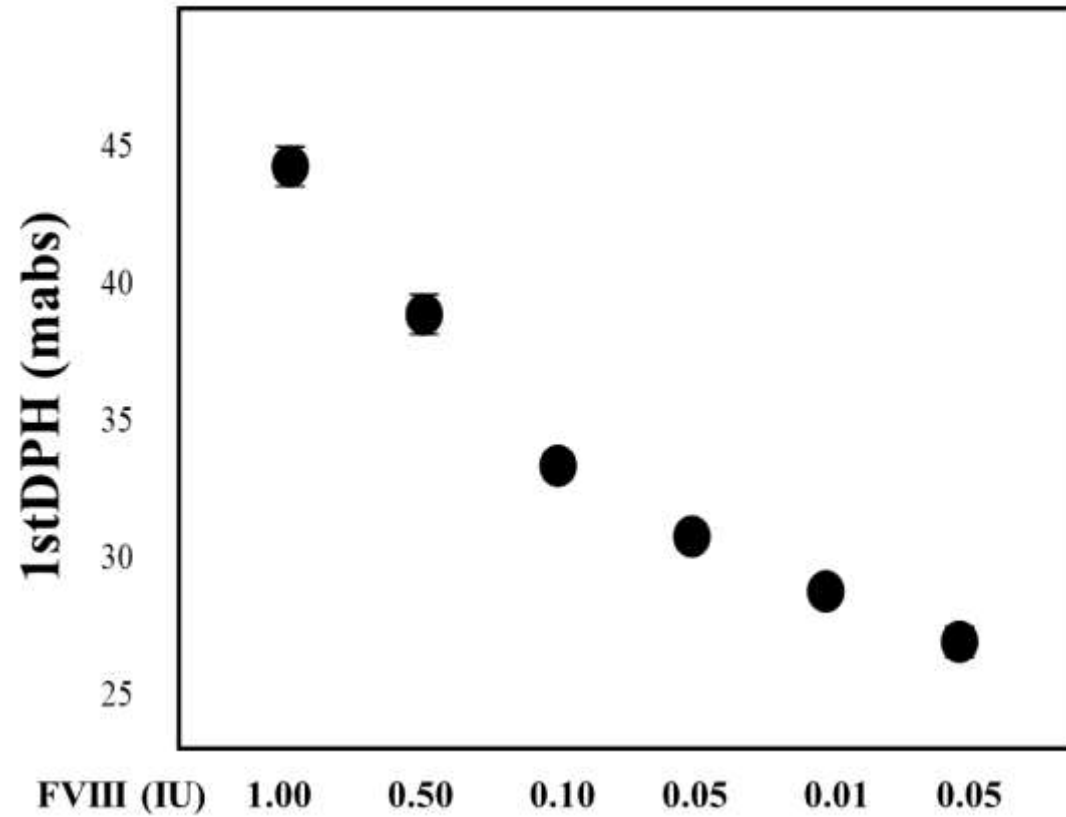


Figure 3. The 1st DPT (A) and 1st DPH (B) of the sTF/FIX assay in various concentrations of FVIII

1st DPT, first derivative peak time; 1st DPH, first derivative peak height