

EQA round: TM3/23 - Tumour Markers

Deadline: 25.7.2023

Setup: groups - measurement principle, manufacturer of kit; Czech Republic; minimal size of the groups n = 5

RoM = robust average	AV = assigned value	D _{max} = acceptable difference
SD = standard deviation	CVPG = consensus of the participants' groups	LL = lower limit
CV = coefficient of variation	U _{AV} = expanded uncertainty of the assigned value (k = 2)	UL = upper limit
N _{tot} = total number of the results		N _{eva} = number of the results assessed
N _{out} = number of the results removed before calculation		N _{suc} = number of successful results
		S _{rel} = relative success

Test Sample Group	[unit]	RoM	SD	CV [%]	N _{tot}	N _{out}	Comparability					N _{eva}	N _{suc}	S _{rel} [%]
							AV	U _{AV}	D _{max}	LL	UL			
(208) β-2-microglobulin	[mg/L]				23							23	23	100
Sample A		1,4	0,19	13	23							23	23	100
(6) IMT, IMN; (1) Abbott		1,35	0,074	5,5	6	0	CVPG	1,41	0,054	21%	1,11	1,71	6	
(6) IMT, IMN; (60) Roche		1,43	0,1	7,3	6	0	CVPG	1,46	0,018	21%	1,15	1,77	6	
Other					11	0							11	
								2x 4/29, 1x 4/164, 3x 6/58, 1x 6/91, 3x 6/149, 1x 6/162						
Sample B		1,38	0,17	12	23							23	23	100
(6) IMT, IMN; (1) Abbott		1,42	0,13	8,9	6	0	CVPG	1,44	0,036	21%	1,13	1,75	6	
(6) IMT, IMN; (60) Roche		1,38	0,03	2,2	6	0	CVPG	1,44	0,016	21%	1,13	1,75	6	
Other					11	0							11	
								2x 4/29, 1x 4/164, 3x 6/58, 1x 6/91, 3x 6/149, 1x 6/162						
(185) AFP	[µg/L]				40							39	39	100
Sample A		52,6	2,8	5,4	40							39	39	100
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (1) Abbott		52,7	1,9	3,5	14	0	CVPG	52,6	0,55	20%	42	63,2	14	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (12) Beckman Coulter		50,7	3,3	6,4	9	0	CVPG	48,6	1,5	20%	38,8	58,4	9	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		55,1	2,8	5,1	9	0	CVPG	55,4	0,45	20%	44,3	66,5	9	
Other					8	0							7	
								1x 3/24, 1x 3/25, 1x 4/29, 1x 4/149, 2x 4/162, 2x 4/179						
Sample B		20,9	1,2	5,7	40							39	39	100
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (1) Abbott		20,7	0,58	2,8	14	0	CVPG	20,8	0,22	20%	16,6	25	14	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (12) Beckman Coulter		20,4	1	5,1	9	0	CVPG	20	0,57	20%	16	24	9	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		22,4	0,88	3,9	9	0	CVPG	22,2	0,19	20%	17,7	26,7	9	
Other					8	0							7	
								1x 3/24, 1x 3/25, 1x 4/29, 1x 4/149, 2x 4/162, 2x 4/179						
(181) CA 15-3	[kU/L]				39							38	36	95
Sample A		11,9	1,9	16	39							38	37	97
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (1) Abbott		11,8	0,7	6	16	0	CVPG	11,8	0,2	18%	9,67	14	16	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (12) Beckman Coulter		9,2	1	11	8	0	CVPG	9,73	0,36	18%	7,97	11,5	8	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		13,7	0,8	5,8	10	0	CVPG	13,4	0,12	18%	10,9	15,9	10	
Other					5	0							4	
								1x 4/29, 1x 4/149, 3x 4/162						
Sample B		12	2	16	39							38	37	97
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (1) Abbott		12	1,1	8,8	16	0	CVPG	11,8	0,21	18%	9,67	14	16	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (12) Beckman Coulter		9,4	0,89	9,5	8	0	CVPG	9,73	0,33	18%	7,97	11,5	8	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		13,6	0,63	4,6	10	0	CVPG	13,4	0,12	18%	10,9	15,9	10	
Other					5	0							4	
								1x 4/29, 1x 4/149, 3x 4/162						
(182) CA 19-9	[kU/L]				40							39	39	100
Sample A		101	80	79	40							39	39	100
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (1) Abbott		180	13	7,1	17	0	CVPG	181	3,7	20%	144	218	17	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (12) Beckman Coulter		43,5	2,7	6,2	8	0	CVPG	42,1	1,3	20%	33,6	50,6	8	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		31,2	1,1	3,6	9	0	CVPG	30,8	0,18	20%	24,6	37	9	
Other					6	0							5	
								1x 3/25, 1x 4/29, 1x 4/149, 2x 4/162, 1x 4/179						
Sample B		229	200	85	40							39	39	100
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (1) Abbott		422	23	5,6	17	0	CVPG	431	8,5	20%	344	518	17	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (12) Beckman Coulter		93,8	4,8	5,1	8	0	CVPG	94,9	2,6	20%	75,9	114	8	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		57,1	2,4	4,2	9	0	CVPG	55,8	0,35	20%	44,6	67	9	
Other					6	0							5	
								1x 3/25, 1x 4/29, 1x 4/149, 2x 4/162, 1x 4/179						
(183) CA 72-4	[kU/L]				26							25	23	92
Sample A		1,39	0,12	8,9	26							25	23	92
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		1,38	0,12	8,6	25	0	CVPG	1,43	0,024	22%	1,11	1,75	25	
Other					1	0							0	
								1x 1/999						
Sample B		1,96	0,18	9,4	26							25	24	96
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		1,94	0,17	8,9	25	0	CVPG	2,04	0,037	22%	1,59	2,49	25	
Other					1	0							0	
								1x 1/999						

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							AV	U _{AV}	D _{max}	LL	UL			
(180) CA 125	[kU/L]				39							37	37	100
Sample A		28,6	4,1	14	39							37	37	100
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (1) Abbott		30,5	1,9	6,1	19	0	CVPG	30,2	0,44	20%	24,1	36,3	19	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (12) Beckman Coulter		16,8	0,52	3,1	6	0	CVPG	16	0,56	20%	12,8	19,2	6	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		28,4	1,2	4,2	9	0	CVPG	27,4	0,21	20%	21,9	32,9	9	
Other					5	0							3	
								1x 3/25, 1x 4/29, 1x 4/149, 2x 4/162						
Sample B		25,6	4,5	18	39							37	37	100
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (1) Abbott		27,9	1,6	5,8	19	0	CVPG	27,8	0,4	20%	22,2	33,4	19	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (12) Beckman Coulter		15,9	0,37	2,3	6	0	CVPG	15,3	0,54	20%	12,2	18,4	6	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		25	1,4	5,6	9	0	CVPG	24,2	0,17	20%	19,3	29,1	9	
Other					5	0							3	
								1x 3/25, 1x 4/29, 1x 4/149, 2x 4/162						
(189) CEA	[µg/L]				44							43	41	95
Sample A		3,76	0,5	13	44							43	41	95
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (1) Abbott		4,06	0,32	7,8	19	0	CVPG	3,95	0,068	16%	3,31	4,59	19	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (12) Beckman Coulter		3,48	0,18	5,1	8	0	CVPG	3,41	0,068	16%	2,86	3,96	8	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		3,77	0,44	12	10	0	CVPG	3,65	0,027	16%	3,06	4,24	10	
Other					7	0							6	
								1x 3/25, 1x 4/29, 1x 4/149, 3x 4/162, 1x 4/179						
Sample B		28,3	6,9	24	44							43	43	100
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (1) Abbott		33,6	2	5,8	19	0	CVPG	33	0,35	16%	27,7	38,3	19	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (12) Beckman Coulter		20,7	1	5	8	0	CVPG	20,8	0,45	16%	17,4	24,2	8	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		27	1,9	7	10	0	CVPG	26,4	0,15	16%	22,1	30,7	10	
Other					7	0							6	
								1x 3/25, 1x 4/29, 1x 4/149, 3x 4/162, 1x 4/179						
(184) CYFRA 21-1	[µg/L]				21							21	21	100
Sample A		2,31	0,51	22	21							21	21	100
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (1) Abbott		1,71	0,14	8,3	7	0	CVPG	1,69	0,044	18%	1,38	2	7	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		2,6	0,19	7,5	14	0	CVPG	2,48	0,031	18%	2,03	2,93	14	
Sample B		2,67	0,58	22	21							21	21	100
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (1) Abbott		2,02	0,27	14	7	0	CVPG	2,04	0,098	18%	1,67	2,41	7	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		3,01	0,18	6,1	14	0	CVPG	2,89	0,032	18%	2,36	3,42	14	
(186) hCG	[U/L]				42							42	41	98
Sample A		58,8	5,1	8,6	42							42	41	98
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (1) Abbott		55	2,8	5,1	13	0	CVPG	55	0,84	18%	45,1	64,9	13	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (12) Beckman Coulter		63,7	2	3,1	9	0	CVPG	64,3	1,3	18%	52,7	75,9	9	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		57,9	3,9	6,8	13	0	CVPG	58,4	0,33	18%	47,8	69	13	
Other					7	0							7	
								1x 3/25, 1x 4/29, 3x 4/162, 2x 4/179						
Sample B		421	37	8,7	42							42	42	100
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (1) Abbott		392	17	4,3	13	0	CVPG	391	4,6	18%	320	462	13	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (12) Beckman Coulter		463	20	4,3	9	0	CVPG	463	8,8	18%	379	547	9	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		412	28	6,8	13	0	CVPG	416	2,3	18%	341	491	13	
Other					7	0							7	
								1x 3/25, 1x 4/29, 3x 4/162, 2x 4/179						
(206) Calcitonin	[ng/L]				6							6	6	100
Sample A					6							6	6	100
Other					6	0						6		
								4x 4/60, 2x 4/164						
Sample B					6							6	6	100
Other					6	0						6		
								4x 4/60, 2x 4/164						
(194) NSE	[µg/L]				20							19	19	100
Sample A		51,6	3,5	6,8	20							19	19	100
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		52	3,4	6,6	17	0	CVPG	52	0,5	30%	36,4	67,6	17	
Other					3	0							2	
								1x 4/1, 2x 4/164						
Sample B		19,5	1,8	9,4	20							19	19	100
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		19,3	1,4	7,2	17	0	CVPG	19,5	0,23	30%	13,6	25,4	17	
Other					3	0							2	
								1x 4/1, 2x 4/164						

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Test Sample Group	[unit]	RoM	SD	CV [%]	N _{tot}	N _{out}	Comparability					N _{eva}	N _{suc}	S _{rel} [%]
							AV	U _{AV}	D _{max}	LL	UL			
(187) p2PSA	[ng/L]				11							11	11	100
Sample A												11	11	100
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (12) Beckman Coulter		21,9	1,3	5,8	11	0	CVPG	21,9	0,93	15%	18,6	25,2	11	
Sample B												11	11	100
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (12) Beckman Coulter		14	1	7,3	11	0	CVPG	14	0,75	15%	11,9	16,1	11	
(191) PSA	[µg/L]				52							50	46	92
Sample A		2,33	0,37	16	52							50	46	92
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (1) Abbott		1,98	0,17	8,6	20	0	CVPG	1,99	0,035	15%	1,69	2,29	20	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (12) Beckman Coulter		2,68	0,12	4,4	11	0	CVPG	2,62	0,053	15%	2,22	3,02	11	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		2,54	0,11	4,5	15	0	CVPG	2,52	0,014	15%	2,14	2,9	15	
Other					6	0							4	
								2x 4/29, 1x 4/149, 1x 4/162, 1x 4/179, 1x 4/195						
Sample B		1,41	0,25	18	52							50	47	94
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (1) Abbott		1,17	0,11	9,4	20	0	CVPG	1,19	0,023	15%	1,01	1,37	20	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (12) Beckman Coulter		1,62	0,1	6,4	11	0	CVPG	1,62	0,037	15%	1,37	1,87	11	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		1,58	0,066	4,2	15	0	CVPG	1,58	0,009	15%	1,34	1,82	15	
Other					6	0							4	
								2x 4/29, 1x 4/149, 1x 4/162, 1x 4/179, 1x 4/195						
(198) free-PSA	[µg/L]				49							47	47	100
Sample A		1,7	0,23	13	49							47	47	100
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (1) Abbott		1,73	0,074	4,3	20	0	CVPG	1,71	0,024	16%	1,43	1,99	20	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (12) Beckman Coulter		2,08	0,12	5,6	10	0	CVPG	2,06	0,041	16%	1,73	2,39	10	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		1,48	0,054	3,7	14	0	CVPG	1,47	0,009	16%	1,23	1,71	14	
Other					5	0							3	
								1x 4/29, 1x 4/149, 1x 4/162, 1x 4/179, 1x 4/195						
Sample B		1,08	0,14	13	49							47	47	100
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (1) Abbott		1,08	0,07	6,5	20	0	CVPG	1,07	0,013	16%	0,898	1,25	20	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (12) Beckman Coulter		1,32	0,084	6,4	10	0	CVPG	1,33	0,03	16%	1,11	1,55	10	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		0,956	0,046	4,8	14	0	CVPG	0,954	0,006	16%	0,801	1,11	14	
Other					5	0							3	
								1x 4/29, 1x 4/149, 1x 4/162, 1x 4/179, 1x 4/195						
(201) S-100	[µg/L]				14							14	12	86
Sample A		14,5	0,88	6,1	14							14	12	86
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		14,5	0,88	6,1	12	0	CVPG	14	0,18	32%	9,52	18,5	12	
Other					2	2							2	
								2x 4/164						
Sample B		0,639	0,047	7,4	14							14	14	100
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		0,628	0,035	5,5	12	0	CVPG	0,612	0,007	32%	0,416	0,808	12	
Other					2	0							2	
								2x 4/164						
(195) SCCA	[µg/L]				14							13	12	92
Sample A		5,35	0,46	8,5	14							13	12	92
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (1) Abbott		5,27	0,4	7,6	8	0	CVPG	5,04	0,12	32%	3,42	6,66	8	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		5,47	0,1	1,9	5	0	CVPG	4,98	0,13	32%	3,38	6,58	5	
Other					1	0							0	
								1x 4/179						
Sample B		4,07	0,33	8,1	14							13	13	100
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (1) Abbott		4,1	0,44	11	8	0	CVPG	3,91	0,093	32%	2,65	5,17	8	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		4,1	0,13	3,3	5	0	CVPG	3,95	0,096	32%	2,68	5,22	5	
Other					1	0							0	
								1x 4/179						
(196) TPA	[U/L]				5							5	5	100
Sample A												5	5	100
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (164) DiaSorin		615	7,3	1,2	5	0	CVPG	612	9,6	25%	459	765	5	
Sample B												5	5	100
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (164) DiaSorin		739	33	4,5	5	0	CVPG	744	12	25%	558	930	5	
(207) Thyreoglobulin	[µg/L]				24							24	24	100
Sample A		83,5	12	14	24							24	24	100
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (1) Abbott		93,2	6,5	7	6	0	CVPG	95,2	3,2	30%	66,6	124	6	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (12) Beckman Coulter		88,4	4,7	5,4	8	0	CVPG	88,4	3,5	30%	61,8	115	8	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		73,2	2,5	3,4	9	0	CVPG	73,5	0,76	30%	51,4	95,6	9	
Other					1	0							1	
								1x 4/29						

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							AV	U _{AV}	D _{max}	LL	UL			
Sample B		168	16	9,3	24							24	24	100
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (1) Abbott		197	21	11	6	0	CVPG	199	8,6	30%	139	259	6	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (12) Beckman Coulter		169	11	6,3	8	0	CVPG	166	5,2	30%	116	216	8	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		158	6,4	4	9	0	CVPG	159	1,9	30%	111	207	9	
Other					1	0							1	
							1x	4/29						