

## EQA round: TM4/23 - Tumour Markers

Deadline: 9.10.2023

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

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

Test Sample Group	[unit]	RoM	SD	CV [%]	N <sub>tot</sub>	N <sub>out</sub>	Comparability					N <sub>eva</sub>	N <sub>suc</sub>	S <sub>rel</sub> [%]
							AV	U <sub>AV</sub>	D <sub>max</sub>	LL	UL			
<b>(208) β-2-microglobulin</b>	[mg/L]				18							15	14	93
<b>Sample A</b>												15	14	93
Other					18	0						15		
							1x 1/36, 1x 4/29, 1x 4/164, 1x 6/1, 1x 6/5, 4x 6/58, 4x 6/60, 1x 6/75, 1x 6/91, 1x 6/149, 1x 6/162, 1x 6/179							
<b>Sample B</b>												15	14	93
Other					18	0						15		
							1x 1/36, 1x 4/29, 1x 4/164, 1x 6/1, 1x 6/5, 4x 6/58, 4x 6/60, 1x 6/75, 1x 6/91, 1x 6/149, 1x 6/162, 1x 6/179							
<b>(185) AFP</b>	[µg/L]				27							27	24	89
<b>Sample A</b>		74,4	8,2	11	27							27	25	93
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (12) Beckman Coulter		68,7	3,8	5,6	6	0	CVPG 69,9	2	20%	55,9	83,9	6		
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		78,2	6,2	7,9	13	0	CVPG 81,6	0,66	20%	65,2	98	13		
Other					8	0						8		
							1x 3/24, 4x 4/1, 1x 4/162, 2x 4/179							
<b>Sample B</b>		9,34	0,73	7,8	27							27	25	93
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (12) Beckman Coulter		9,02	0,27	3	6	0	CVPG 9,28	0,26	±2	7,28	11,3	6		
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		9,56	0,9	9,5	13	0	CVPG 9,93	0,091	±2	7,93	12	13		
Other					8	0						8		
							1x 3/24, 4x 4/1, 1x 4/162, 2x 4/179							
<b>(181) CA 15-3</b>	[kU/L]				26							26	26	100
<b>Sample A</b>		41,9	3,8	9	26							26	26	100
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (1) Abbott		42,1	1,8	4,2	5	0	CVPG 41,8	0,55	18%	34,2	49,4	5		
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		43,3	3	6,9	13	0	CVPG 42,3	0,33	18%	34,6	50	13		
Other					8	0						8		
							1x 3/24, 4x 4/12, 1x 4/162, 2x 4/179							
<b>Sample B</b>		13,2	1,6	12	26							26	26	100
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (1) Abbott		12,5	0,52	4,2	5	0	CVPG 12,6	0,19	18%	10,3	14,9	5		
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		13,9	1,1	7,9	13	0	CVPG 14	0,11	18%	11,4	16,6	13		
Other					8	0						8		
							1x 3/24, 4x 4/12, 1x 4/162, 2x 4/179							
<b>(182) CA 19-9</b>	[kU/L]				28							28	24	86
<b>Sample A</b>		11	4,9	44	28							28	25	89
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (12) Beckman Coulter		7,8	0,44	5,7	6	0	CVPG 7,78	0,2	±2,8	4,98	10,6	6		
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		9,09	1,1	12	15	0	CVPG 8,84	0,093	±2,8	6,04	11,7	15		
Other					7	0						7		
							4x 4/1, 1x 4/162, 2x 4/179							
<b>Sample B</b>		53,5	23	42	28							28	27	96
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (12) Beckman Coulter		50	2,4	4,8	6	0	CVPG 52,3	1,4	20%	41,8	62,8	6		
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		39,2	2,8	7,1	15	0	CVPG 37,8	0,24	20%	30,2	45,4	15		
Other					7	0						7		
							4x 4/1, 1x 4/162, 2x 4/179							
<b>(183) CA 72-4</b>	[kU/L]				24							23	20	87
<b>Sample A</b>		1,84	0,21	12	24							23	22	96
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		1,83	0,2	11	23	0	CVPG 1,89	0,023	22%	1,47	2,31	23		
Other					1	0						0		
							1x 4/73							
<b>Sample B</b>		1,38	0,18	13	24							23	20	87
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		1,37	0,18	13	23	0	CVPG 1,43	0,018	22%	1,11	1,75	23		
Other					1	0						0		
							1x 4/73							
<b>(180) CA 125</b>	[kU/L]				29							29	29	100
<b>Sample A</b>		13,3	1,9	14	29							29	29	100
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (1) Abbott		15,5	1,1	7,4	6	0	CVPG 15,7	0,19	20%	12,5	18,9	6		
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		12,9	0,82	6,4	15	0	CVPG 12,8	0,097	20%	10,2	15,4	15		
Other					8	0						8		
							1x 3/24, 1x 3/25, 3x 4/12, 1x 4/162, 2x 4/179							
<b>Sample B</b>		9,72	1,2	13	29							29	29	100
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (1) Abbott		11,3	0,6	5,3	6	0	CVPG 11,2	0,15	20%	8,96	13,5	6		
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		9,47	0,76	8	15	0	CVPG 9,46	0,07	±2	7,46	11,5	15		

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Test Sample Group	[unit]	RoM	SD	CV [%]	N <sub>tot</sub>	N <sub>out</sub>	Comparability					N <sub>eva</sub>	N <sub>suc</sub>	S <sub>rel</sub> [%]
							AV	U <sub>AV</sub>	D <sub>max</sub>	LL	UL			
Other					8	0	1x 3/24, 1x 3/25, 3x 4/12, 1x 4/162, 2x 4/179					8		
<b>(189) CEA</b>	[µg/L]				29							29	28	97
<b>Sample A</b>		10,5	1,6	15	29							29	29	100
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (1) Abbott		13,1	0,82	6,2	5	0	CVPG	13,4	0,13	16%	11,2	15,6	5	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (12) Beckman Coulter		9	0,44	4,9	5	0	CVPG	9,09	0,2	16%	7,63	10,6	5	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		10,8	0,8	7,4	14	0	CVPG	10,5	0,059	16%	8,82	12,2	14	
Other					5	0	1x 4/162, 4x 4/179					5		
<b>Sample B</b>		51,4	11	21	29							29	28	97
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (1) Abbott		68,8	0,44	0,65	5	0	CVPG	70,1	0,54	16%	58,8	81,4	5	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (12) Beckman Coulter		42,5	3,9	9,1	5	0	CVPG	41,6	0,93	16%	34,9	48,3	5	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		52,1	3,7	7,1	14	0	CVPG	52,9	0,27	16%	44,4	61,4	14	
Other					5	0	1x 4/162, 4x 4/179					5		
<b>(184) CYFRA 21-1</b>	[µg/L]				24							23	21	91
<b>Sample A</b>		96	6,1	6,4	24							23	22	96
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (1) Abbott		97	4,5	4,7	6	0	CVPG	95,8	1,9	18%	78,5	114	6	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		94	6,4	6,8	16	0	CVPG	93,4	1	18%	76,5	111	16	
Other					2	0	1x 3/24, 1x 4/73					1		
<b>Sample B</b>		8,22	1,2	14	24							23	22	96
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (1) Abbott		6,86	0,65	9,5	6	0	CVPG	6,67	0,22	18%	5,46	7,88	6	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		8,75	0,69	7,9	16	0	CVPG	8,36	0,12	18%	6,85	9,87	16	
Other					2	0	1x 3/24, 1x 4/73					1		
<b>(186) hCG</b>	[U/L]				30							30	26	87
<b>Sample A</b>		13,8	1,6	12	30							30	27	90
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (12) Beckman Coulter		15	0,82	5,5	8	0	CVPG	15,1	0,24	18%	12,3	17,9	8	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		12,9	0,67	5,2	8	0	CVPG	12,8	0,081	18%	10,4	15,2	8	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (210) Roche HCG STAT		12,7	0,89	7	7	1	CVPG	12,3	0,41	18%	10	14,6	7	
Other					7	0	1x 3/25, 3x 4/1, 1x 4/162, 2x 4/179					7		
<b>Sample B</b>		300	52	17	30							30	29	97
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (12) Beckman Coulter		255	11	4,5	8	0	CVPG	265	4,3	18%	217	313	8	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		366	24	6,5	8	0	CVPG	354	2,7	18%	290	418	8	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (210) Roche HCG STAT		283	26	9,1	7	0	CVPG	294	9,6	18%	241	347	7	
Other					7	0	1x 3/25, 3x 4/1, 1x 4/162, 2x 4/179					7		
<b>(206) Calcitonin</b>	[ng/L]				8							7	7	100
<b>Sample A</b>		23,7	4,1	17	8							7	7	100
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		22,6	2,5	11	6	0	CVPG	21,5	1,1	52%	10,3	32,7	6	
Other					2	0	1x 1/36, 1x 4/29					1		
<b>Sample B</b>		16,6	5,1	30	8							7	7	100
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		16,6	5,1	30	6	0	CVPG	18,6	1,1	52%	8,92	28,3	6	
Other					2	0	1x 1/36, 1x 4/29					1		
<b>(194) NSE</b>	[µg/L]				24							22	22	100
<b>Sample A</b>		9,77	1,5	15	24							22	22	100
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		9,64	0,92	9,5	19	0	CVPG	9,13	0,096	30%	6,39	11,9	19	
Other					5	0	1x 3/24, 1x 3/166, 2x 4/1, 1x 4/73					3		
<b>Sample B</b>		112	16	14	24							22	22	100
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		115	12	11	19	0	CVPG	111	1,4	30%	77,7	145	19	
Other					5	0	1x 3/24, 1x 3/166, 2x 4/1, 1x 4/73					3		
<b>(187) p2PSA</b>	[ng/L]				2							2	2	100
<b>Sample A</b>					2	0						2	2	100
Other					2	0	2x 4/12					2		
<b>Sample B</b>					2	0						2	2	100
Other					2	0	2x 4/12					2		

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Test Sample Group	[unit]	RoM	SD	CV [%]	N <sub>tot</sub>	N <sub>out</sub>	Comparability					N <sub>eva</sub>	N <sub>suc</sub>	S <sub>rel</sub> [%]
							AV	U <sub>AV</sub>	D <sub>max</sub>	LL	UL			
<b>(191) PSA</b>	[µg/L]				31							31	27	87
<b>Sample A</b>		7,56	0,98	13	31							31	29	94
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (1) Abbott		6,39	0,21	3,3	6	0	CVPG	6,27	0,065	15%	5,32	7,22	6	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (12) Beckman Coulter		8,48	0,57	6,7	6	0	CVPG	8,56	0,18	15%	7,27	9,85	6	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		7,99	0,38	4,8	13	0	CVPG	7,81	0,05	15%	6,63	8,99	13	
Other					6	0							6	
								1x 4/162, 4x 4/179, 1x 4/195						
<b>Sample B</b>		0,957	0,15	15	31							31	28	90
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (1) Abbott		0,765	0,03	4	6	0	CVPG	0,759	0,01	15%	0,645	0,873	6	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (12) Beckman Coulter		1,06	0,089	8,4	6	0	CVPG	1,09	0,026	15%	0,926	1,26	6	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		1,03	0,052	5	13	0	CVPG	1,03	0,007	15%	0,875	1,19	13	
Other					6	0							6	
								1x 4/162, 4x 4/179, 1x 4/195						
<b>(198) free-PSA</b>	[µg/L]				25							25	22	88
<b>Sample A</b>		5,13	0,55	11	25							25	23	92
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (1) Abbott		5,65	0,2	3,5	6	0	CVPG	5,58	0,057	16%	4,68	6,48	6	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		4,83	0,36	7,5	10	0	CVPG	4,59	0,036	16%	3,85	5,33	10	
Other					9	0							9	
								4x 4/12, 4x 4/179, 1x 4/195						
<b>Sample B</b>		0,622	0,05	8,1	25							25	22	88
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (1) Abbott		0,64	0,045	7	6	0	CVPG	0,642	0,007 ± 0,112		0,53	0,754	6	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		0,597	0,035	5,8	10	0	CVPG	0,594	0,005 ± 0,112		0,482	0,706	10	
Other					9	0							9	
								4x 4/12, 4x 4/179, 1x 4/195						
<b>(201) S-100</b>	[µg/L]				9							8	8	100
<b>Sample A</b>		1,19	0,074	6,2	9							8	8	100
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		1,18	0,089	7,5	8	0	CVPG	1,14	0,013	32%	0,775	1,51	8	
Other					1	0							0	
								1x 2/98						
<b>Sample B</b>		0,068	0,003	4,4	9							8	8	100
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		0,068	0,004	5,5	8	0	CVPG	0,068	0,001	32%	0,046	0,09	8	
Other					1	0							0	
								1x 2/98						
<b>(195) SCCA</b>	[µg/L]				13							11	9	82
<b>Sample A</b>		1,34	0,28	21	13							11	10	91
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (1) Abbott		1,2	0,15	12	6	0	CVPG	1,29	0,042	32%	0,877	1,71	6	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		1,32	0,25	19	5	0	CVPG	1,5	0,053	32%	1,02	1,98	5	
Other					2	0							0	
								1x 4/73, 1x 4/162						
<b>Sample B</b>		2,53	0,36	14	13							11	9	82
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (1) Abbott		2,5	0,15	5,9	6	0	CVPG	2,46	0,052	32%	1,67	3,25	6	
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		2,05	0,82	40	5	0	CVPG	2,52	0,063	32%	1,71	3,33	5	
Other					2	0							0	
								1x 4/73, 1x 4/162						
<b>(207) Thyreoglobulin</b>	[µg/L]				13							12	10	83
<b>Sample A</b>		27	7,6	28	13							12	10	83
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		31,8	1,3	4,2	6	0	CVPG	30,4	0,32	30%	21,2	39,6	6	
Other					7	0							6	
								1x 3/24, 1x 3/166, 3x 4/12, 1x 4/29, 1x 4/164						
<b>Sample B</b>		38,7	11	29	13							12	10	83
(4) LIA (CLIA, CMIA, ECLIA, LOCI); (60) Roche		45	4,6	10	6	0	CVPG	47	0,56	30%	32,9	61,1	6	
Other					7	0							6	
								1x 3/24, 1x 3/166, 3x 4/12, 1x 4/29, 1x 4/164						