Summary statistics - quantitative results

EQA round: AKS2/23 - Basic Clinical Chemistry - Serum

Deadline: 7.4.2023

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

RoM = robust average	AV = assigned value	D_{max} = acceptable difference
SD = standard deviation	CRV = certified reference value	LL = lower limit
CV = coefficient of variation	CVP = consensus of all participants	UL = upper limit
N_{tot} = total number of the results	CVPG = consensus of the participants' groups	N_{eva} = number of the results assessed
N_{out} = number of the results removed before calculation	U_{AV} = expanded uncertainty of the assigned value (k = 2)	N_{suc} = number of successful results
		S_{rel} = relative success

Test / Sample / Group	[unit]	RoM	SD	CV [%]	N_{tot}	N_{out}	Comparability AV		U_{AV}	D_{max}	LL	UL	N_{eva}	N_{suc}	S_{rel} [%]	Traceability AV		U_{AV}	D_{max}	LL	UL	N_{eva}	N_{suc}	S_{rel} [%]
(22) **α-amylase**	[µkat/L]				67								0									67	66	99
Sample A													0									67	66	99
(0) Not specified		3,35	0,16	4,8	67	0										CRV	3,455	0,098	15%	2,93	3,98	67		
Sample B													0									67	66	99
(0) Not specified		5,91	0,37	6,2	67	0										CRV	5,98	0,16	15%	5,08	6,88	67		
(35) **α-amylase pancreatic**	[µkat/L]				14								14	14	100							0		
Sample A													14	14	100							0		
(0) Not specified		2,49	0,11	4,6	14	0	CVP	2,5	0,019	18%	2,05	2,95	14											
Sample B													14	14	100							0		
(0) Not specified		5,09	0,25	4,9	14	0	CVP	5,05	0,039	18%	4,14	5,96	14											
(32) **γ-globulin (elfo)**	[-]				11								11	11	100							0		
Sample A													11	11	100							0		
(0) Not specified		0,132	0,013	9,5	11	0	CVP	0,129	0,005	30%	0,09	0,168	11											
Sample B													11	11	100							0		
(0) Not specified		0,13	0,008	5,7	11	0	CVP	0,127	0,003	30%	0,088	0,166	11											
(10) **Albumin**	[g/L]				66								66	62	94							0		
Sample A		57,5	1,7	2,9	66		CVP	58	0,22	10%	52,2	63,8	66	64	97							0		
(1) BCG		57,5	1,7	3	64	0							64											
Other					2	0							2											
							2x 2																	
Sample B		44,1	1,6	3,6	66		CVP	44,6	0,19	10%	40,1	49,1	66	64	97							0		
(1) BCG		44,2	1,6	3,6	64	0							64											
Other					2	0							2											
							2x 2																	
(31) **Albumin (elpho)**	[-]				11								11	11	100							0		
Sample A													11	11	100							0		
(0) Not specified		0,608	0,043	7	11	0	CVP	0,617	0,016	15%	0,524	0,71	11											
Sample B													11	11	100							0		
(0) Not specified		0,611	0,038	6,3	11	0	CVP	0,633	0,011	15%	0,538	0,728	11											
(21) **ALP**	[µkat/L]				68								65	57	88							68	57	84
Sample A		6,04	0,51	8,4	68								65	64	98							68	66	97
(3) IFCC method		6,04	0,51	8,4	68	0										CRV	6,28	0,18	18%	5,14	7,42	68		
(3) IFCC method; (1) Abbott		5,9	0,11	1,8	13	0	CVPG	6,05	0,059	14%	5,2	6,9	13											
(3) IFCC method; (46) Erba Lachema		6,2	0,14	2,3	6	0	CVPG	6,31	0,27	14%	5,42	7,2	6											
(3) IFCC method; (58) Beckman Coulter (AU)		6,53	0,36	5,5	19	0	CVPG	6,47	0,12	14%	5,56	7,38	19											
(3) IFCC method; (60) Roche		5,61	0,34	6	23	0	CVPG	5,46	0,059	14%	4,69	6,23	23											
Other					7	0							4											
							3x 3/12, 1x 3/162, 3x 3/178																	
Sample B		0,773	0,075	9,7	68								65	58	89							68	59	87
(3) IFCC method		0,773	0,075	9,7	68	0										CRV	0,828	0,035	18%	0,678	0,978	68		

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Test / Sample / Group	[unit]	RoM	SD	CV [%]	N_{tot}	N_{out}	Comparability	AV	U_{AV}	D_{max}	LL	UL	N_{eva}	N_{suc}	S_{rel} [%]	Traceability	AV	U_{AV}	D_{max}	LL	UL	N_{eva}	N_{suc}	S_{rel} [%]
(3) IFCC method; (1) Abbott		0,769	0,037	4,9	13	0	CVPG	0,811	0,016	14%	0,697	0,925	13											
(3) IFCC method; (46) Erba Lachema		0,825	0,096	12	6	0	CVPG	0,824	0,042	14%	0,708	0,94	6											
(3) IFCC method; (58) Beckman Coulter (AU)		0,712	0,086	12	19	0	CVPG	0,701	0,021	14%	0,602	0,8	19											
(3) IFCC method; (60) Roche		0,801	0,059	7,3	23	0	CVPG	0,783	0,008	14%	0,673	0,893	23											
Other					7	0							4											
							3x 3/12, 1x 3/162, 3x 3/178																	
(24) **ALT**	[µkat/L]				70								0									70	68	97
Sample A													0									70	69	99
(0) Not specified		3,6	0,18	4,9	70	0										CRV	3,649	0,081	15%	3,1	4,2	70		
Sample B													0									70	69	99
(0) Not specified		1,73	0,082	4,7	70	0										CRV	1,702	0,045	15%	1,44	1,96	70		
(23) **AST**	[µkat/L]				70								0									70	68	97
Sample A													0									70	68	97
(0) Not specified		4,74	0,26	5,5	70	0										CRV	4,66	0,1	15%	3,96	5,36	70		
Sample B													0									70	70	100
(0) Not specified		1,52	0,072	4,8	70	0										CRV	1,473	0,044	15%	1,25	1,7	70		
(13) **Bilirubin total**	[µmol/L]				69								0									69	68	99
Sample A		65,9	5,6	8,5	69								0			CRV	65	1,5	26%	48,1	81,9	69	68	99
(2) DCA, DPD		65,6	5,3	8,1	62	0																62		
Other					7	0																7		
																4x 1, 3x 4								
Sample B		22,3	2,5	11	69								0			CRV	21,42	0,57	26%	15,8	27	69	69	100
(2) DCA, DPD		22,3	2,5	11	62	0																62		
Other					7	0																7		
																4x 1, 3x 4								
(9) **Total protein**	[g/L]				67								0									67	62	93
Sample A													0									67	63	94
(0) Not specified		92,8	2,8	3	67	0										CRV	95,4	2,8	9%	86,8	104	67		
Sample B													0									67	66	99
(0) Not specified		69,7	1,9	2,7	67	0										CRV	69,9	1,5	9%	63,6	76,2	67		
(26) **CK**	[µkat/L]				66								0									66	63	95
Sample A													0									66	63	95
(0) Not specified		3,67	0,26	7,1	66	0										CRV	4,007	0,096	20%	3,2	4,81	66		
Sample B													0									66	66	100
(0) Not specified		5,69	0,41	7,1	66	0										CRV	6	0,17	20%	4,8	7,2	66		
(2) **Potassium**	[mmol/L]				68								0									68	68	100
Sample A		6,96	0,14	2,1	68								0			CRV	6,94	0,11	7%	6,45	7,43	68	68	100
(2) Indirect ISE		6,95	0,14	2	58	0																58		
(3) Direct ISE		7,01	0,2	2,9	10	0																10		
Sample B		5,68	0,098	1,7	68								0			CRV	5,621	0,084	7%	5,22	6,02	68	68	100
(2) Indirect ISE		5,68	0,092	1,6	58	0																58		
(3) Direct ISE		5,74	0,13	2,2	10	0																10		
(5) **Inorganic phosphate**	[mmol/L]				63								63	61	97							0		
Sample A													63	61	97							0		
(1) UV-molybdate method		2,04	0,053	2,6	63	0	CVP	2,03	0,008	10%	1,82	2,24	63											

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Test / Sample / Group	[unit]	RoM	SD	CV [%]	N_{tot}	N_{out}	Comparability	AV	U_{AV}	D_{max}	LL	UL	N_{eva}	N_{suc}	S_{rel} [%]	Traceability	AV	U_{AV}	D_{max}	LL	UL	N_{eva}	N_{suc}	S_{rel} [%]
Sample B													63	63	100							0		
(1) UV-molybdate method		1,23	0,034	2,8	63	0	CVP	1,22	0,005	10%	1,09	1,35	63											
(27) **gamma-GT**	[µkat/L]				68								0									68	68	100
Sample A													0									68	68	100
(0) Not specified		3,28	0,1	3,1	68	0										CRV	3,352	0,082	21%	2,64	4,06	68		
Sample B													0									68	68	100
(0) Not specified		0,98	0,028	2,9	68	0										CRV	1,053	0,027	21%	0,831	1,28	68		
(16) **Glucose**	[mmol/L]				71								0									71	68	96
Sample A		6,65	0,21	3,2	71								0			CRV	6,818	0,068	8%	6,27	7,37	71	69	97
(1) GOD photometry		6,79	0,27	4	21	0																21		
(3) Method with hexokinase		6,61	0,16	2,4	49	0																49		
Other					1	0																1		
																1x 2								
Sample B		4,62	0,14	3	71								0			CRV	4,656	0,047	8%	4,28	5,03	71	70	99
(1) GOD photometry		4,71	0,17	3,7	21	0																21		
(3) Method with hexokinase		4,59	0,1	2,2	49	0																49		
Other					1	0																1		
																1x 2								
(7) **Magnesium**	[mmol/L]				64								0									64	64	100
Sample A		1,02	0,024	2,4	64								0			CRV	1,008	0,02	15%	0,856	1,16	64	64	100
(2) Photometry		1,03	0,023	2,3	51	0																51		
(4) UV enzyme method		1	0,026	2,6	13	0																13		
Sample B		1,5	0,039	2,6	64								0			CRV	1,499	0,029	15%	1,27	1,73	64	64	100
(2) Photometry		1,5	0,031	2,1	51	0																51		
(4) UV enzyme method		1,51	0,061	4	13	0																13		
(3) **Chloride**	[mmol/L]				68								68	68	100							0		
Sample A		132	3,2	2,4	68		CVP	132	0,44	7%	122	142	68	68	100							0		
(3) Indirect ISE		132	3	2,3	58	0							58											
(4) Direct ISE		133	4,9	3,7	10	0							10											
Sample B		116	2,5	2,1	68		CVP	116	0,37	7%	107	125	68	68	100							0		
(3) Indirect ISE		116	2,5	2,2	58	0							58											
(4) Direct ISE		116	2,2	1,9	10	0							10											
(15) **Cholesterol**	[mmol/L]				66								0									66	60	91
Sample A													0									66	60	91
(0) Not specified		5,87	0,25	4,2	66	0										CRV	5,933	0,066	9%	5,39	6,47	66		
Sample B													0									66	62	94
(0) Not specified		4,44	0,18	4	66	0										CRV	4,483	0,045	9%	4,07	4,89	66		
(30) **Cholinesterase**	[µkat/L]				28								28	26	93							0		
Sample A													28	26	93							0		
(0) Not specified		166	8,3	5	28	0	CVP	167	1,7	12%	146	188	28											
Sample B													28	26	93							0		
(0) Not specified		133	5,6	4,2	28	0	CVP	134	1,3	12%	117	151	28											
(19) **Creatinine**	[µmol/L]				70								0									70	59	84
Sample A		149	7,3	4,9	70								0			CRV	146,7	1,5	13%	127	166	70	66	94
(1) Jaffe		153	8,7	5,7	38	0																38		
(3) Enzyme		146	4,6	3,1	32	0																32		

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Test / Sample / Group	[unit]	RoM	SD	CV [%]	N_{tot}	N_{out}	Comparability	AV	U_{AV}	D_{max}	LL	UL	N_{eva}	N_{suc}	S_{rel} [%]	Traceability	AV	U_{AV}	D_{max}	LL	UL	N_{eva}	N_{suc}	S_{rel} [%]
Sample B		60,1	4,7	7,9	70								0			CRV	58,14	0,58	13%	50,5	65,7	70	61	87
(1) Jaffe		62,5	5,3	8,5	38	0																38		
(3) Enzyme		57,8	3,1	5,3	32	0																32		
(17) **Uric acid**	[µmol/L]				67								0									67	66	99
Sample A													0									67	66	99
(0) Not specified		204	5,6	2,8	67	0										CRV	203,1	2	12%	178	228	67		
Sample B													0									67	67	100
(0) Not specified		402	11	2,8	67	0										CRV	391,8	3,9	12%	344	439	67		
(12) **Lactate**	[mmol/L]				28								28	27	96							0		
Sample A		4,62	0,14	3,1	28		CVP	4,67	0,033	15%	3,96	5,38	28	27	96							0		
(1) UV enzyme method		4,56	0,12	2,7	12	0							12											
(3) Photometric enzyme method		4,68	0,1	2,2	15	0							15											
Other					1	0							1											
							1x 2																	
Sample B		3,94	0,12	3,1	28		CVP	3,98	0,025	15%	3,38	4,58	28	27	96							0		
(1) UV enzyme method		3,92	0,08	2	12	0							12											
(3) Photometric enzyme method		3,97	0,14	3,6	15	0							15											
Other					1	0							1											
							1x 2																	
(28) **LD**	[µkat/L]				51								0									51	50	98
Sample A													0									51	50	98
(0) Not specified		4,62	0,17	3,7	51	0										CRV	4,6	0,12	18%	3,77	5,43	51		
Sample B													0									51	50	98
(0) Not specified		3,38	0,13	3,7	51	0										CRV	3,368	0,086	18%	2,76	3,98	51		
(29) **Lipase**	[µkat/L]				31								28	27	96							0		
Sample A		2,76	0,25	9,2	31								28	28	100							0		
(0) Not specified; (58) Beckman Coulter (AU)		2,76	0,14	5,2	11	0	CVPG	2,79	0,051	24%	2,12	3,46	11											
(0) Not specified; (60) Roche		2,77	0,096	3,5	9	0	CVPG	2,82	0,037	24%	2,14	3,5	9											
Other					11	0							8											
							2x 0/1, 1x 0/12, 3x 0/116, 1x 0/162, 2x 0/178, 2x 0/179																	
Sample B		0,992	0,062	6,3	31								28	27	96							0		
(0) Not specified; (58) Beckman Coulter (AU)		1,02	0,058	5,7	11	0	CVPG	1,02	0,02	24%	0,775	1,27	11											
(0) Not specified; (60) Roche		0,975	0,022	2,3	9	0	CVPG	0,98	0,012	24%	0,744	1,22	9											
Other					11	0							8											
							2x 0/1, 1x 0/12, 3x 0/116, 1x 0/162, 2x 0/178, 2x 0/179																	
(8) **Lithium**	[mmol/L]				8								0									8	5	63
Sample A		0,88	0,074	8,4	8								0			CRV	0,947	0,014	12%	0,833	1,07	8	5	63
(4) Photometry		0,879	0,073	8,3	7	0																7		
Other					1	0																1		
																1x 3								
Sample B		0,81	0,1	13	8								0			CRV	0,857	0,013	12%	0,754	0,96	8	5	63
(4) Photometry		0,798	0,085	11	7	0																7		
Other					1	0																1		
																1x 3								

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(18) **Urea**	[mmol/L]				70								0									70	68	97
Sample A		19,8	0,66	3,3	70								0			CRV	20,01	0,2	15%	17	23,1	70	69	99
(1) UV enzymatic m.(GMD)		19,8	0,66	3,3	69	0																69		
Other					1	0																1		
																1x 2								
Sample B		12,7	0,42	3,3	70								0			CRV	12,97	0,13	15%	11	15	70	69	99
(1) UV enzymatic m.(GMD)		12,7	0,43	3,4	69	0																69		
Other					1	0																1		
																1x 2								
(11) **Osmolality**	[mmol/kg]				22								22	21	95							0		
Sample A													22	21	95							0		
(0) Not specified		345	6,5	1,9	22	0	CVP	343	1,6	5%	325	361	22											
Sample B													22	22	100							0		
(0) Not specified		304	5	1,6	22	0	CVP	304	1	5%	288	320	22											
(1) **Sodium**	[mmol/L]				68								0									68	65	96
Sample A		151	2,4	1,6	68								0			CRV	152,8	2,3	5%	145	161	68	65	96
(2) Indirect ISE		151	2,3	1,5	58	0																58		
(3) Direct ISE		151	5,9	3,9	10	0																10		
Sample B		138	1,8	1,3	68								0			CRV	138,3	2,1	5%	131	146	68	68	100
(2) Indirect ISE		138	1,8	1,3	58	0																58		
(3) Direct ISE		138	1,9	1,4	10	0																10		
(20) **Triacylglycerols**	[mmol/L]				65								0									65	62	95
Sample A		1,51	0,072	4,8	65								0			CRV	1,546	0,015	18%	1,26	1,83	65	62	95
(1) Photometric enzyme (GPO-PAP)		1,51	0,071	4,7	64	0																64		
Other					1	0																1		
																1x 2								
Sample B		2,09	0,081	3,9	65								0			CRV	2,104	0,021	18%	1,72	2,49	65	65	100
(1) Photometric enzyme (GPO-PAP)		2,08	0,081	3,9	64	0																64		
Other					1	0																1		
																1x 2								
(4) **Calcium**	[mmol/L]				65								0									65	62	95
Sample A		2,96	0,076	2,6	65								0			CRV	2,993	0,045	8%	2,75	3,24	65	63	97
(2) Phot. with o-cresolftalexon		2,92	0,12	4,1	7	0																7		
(3) Photom. with arsenazo III		2,97	0,081	2,7	40	0																40		
(4) Photomet. with NM-BAPTA		2,95	0,066	2,2	18	0																18		
Sample B		2,11	0,053	2,5	65								0			CRV	2,076	0,031	8%	1,9	2,25	65	63	97
(2) Phot. with o-cresolftalexon		2,1	0,059	2,8	7	0																7		
(3) Photom. with arsenazo III		2,11	0,061	2,9	40	0																40		
(4) Photomet. with NM-BAPTA		2,11	0,036	1,7	18	0																18		
(36) **Calcium ionised**	[mmol/L]				10								10	9	90							0		
Sample A													10	9	90							0		
(2) Direct ISE		1,71	0,069	4	10	0	CVP	1,7	0,021	10%	1,53	1,87	10											
Sample B													10	9	90							0		
(2) Direct ISE		1,35	0,056	4,1	10	0	CVP	1,35	0,015	10%	1,21	1,49	10											

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Deadline: 7.4.2023

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

Test / Sample / Group	[unit]	RoM	SD	CV [%]	N_{tot}	N_{out}	Comparability	AV	U_{AV}	D_{max}	LL	UL	N_{eva}	N_{suc}	S_{rel} [%]	Traceability	AV	U_{AV}	D_{max}	LL	UL	N_{eva}	N_{suc}	S_{rel} [%]
(6) **Iron**	[µmol/L]				60								60	59	98							0		
Sample A		39,8	1,1	2,6	60		CVP	40	0,15	15%	34	46	60	59	98							0		
(2) Method with ferrozine/ferene		39,7	1,1	2,9	45	0							45											
(4) Method with TPTZ		40	0,91	2,3	15	0							15											
Sample B		23,7	0,74	3,1	60		CVP	23,8	0,1	15%	20,2	27,4	60	59	98							0		
(2) Method with ferrozine/ferene		23,8	0,84	3,5	45	0							45											
(4) Method with TPTZ		23,6	0,48	2	15	0							15											