

Summary statistics - quantitative results

(Groups: measurement principle)

Filter: Slovakia, minimal size of the groups n = 5

EQA round: AKS2/22 - Basic Clinical Chemistry - Serum

Deadline: 08.04.2022

RoM = robust average	AV = assigned value	Dmax = acceptable percent difference
SD = standard deviation	CRV = certified reference value	LL = lower limit
CV = coefficient of variation	RV = reference value	UL = upper limit
Ntot = total number of the participants	CVE = consensus value from experts	Neva = number of evaluated participants
Nout = number of results excluded before calculation	CVP = consensus value from all participants	Nsuc = number of successful participants
	CVPG = consensus value from participants groups	Srel = success (relative)
	U _{AV} = expanded uncertainty of the assigned value (k = 2)	

Test	[unit]	Comparability					Traceability															
		RoM	SD	CV [%]	N _{tot}	N _{out}	AV	U _{AV}	D _{max}	LL	UL	N _{eva}	N _{suc}	S _{rel}								
(1) Sodium					68							0				68	68	100%				
Samples and groups	[mmol/L]																					
Sample A		119	2,0	1,7	68							0	CRV	119,7	1,8	5%	113	126	68	68	100%	
(2) Indirect ISE		119	1,9	1,6	57	0													57			
(3) Direct ISE		120	3,0	2,5	10	0													10			
Other					1	0													1			
													1x 99									
Sample B		128	2,2	1,7	68							0	CRV	128,3	1,9	5%	121	135	68	68	100%	
(2) Indirect ISE		128	2,0	1,5	57	0													57			
(3) Direct ISE		129	3,1	2,4	10	0													10			
Other					1	0													1			
													1x 99									
(2) Potassium					68							0							68	66	97%	
Samples and groups	[mmol/L]																					
Sample A		4,32	0,09	2,1	68							0	CRV	4,322	0,065	7%	4,01	4,63	68	68	100%	
(2) Indirect ISE		4,32	0,09	2,1	57	0													57			
(3) Direct ISE		4,34	0,05	1,3	10	0													10			
Other					1	0													1			
													1x 99									
Sample B		3,38	0,06	2,0	68							0	CRV	3,353	0,050	7%	3,11	3,59	68	66	97%	
(2) Indirect ISE		3,38	0,06	2,0	57	0													57			
(3) Direct ISE		3,39	0,05	1,7	10	0													10			
Other					1	0													1			
													1x 99									
(3) Chloride					68							68	66	97%					0			
Samples and groups	[mmol/L]																					
Sample A		97,3	2,6	2,7	68		CVP	97,8	0,39	7%	90,9	105	68	67	99%				0			
(3) Indirect ISE		97,1	2,7	2,8	57	0							57									
(4) Direct ISE		98,5	2,2	2,3	10	0							10									
Other					1	0							1									
							1x 99															
Sample B		112	2,4	2,1	68		CVP	112	0,38	7%	104	120	68	67	99%				0			
(3) Indirect ISE		112	2,4	2,2	57	0							57									
(4) Direct ISE		112	2,1	1,8	10	0							10									
Other					1	0							1									
							1x 99															
(4) Calcium					65							0							65	64	98%	
Samples and groups	[mmol/L]																					
Sample A		1,80	0,04	2,5	65							0	CRV	1,797	0,027	8%	1,65	1,95	65	64	98%	
(2) Phot. with o-cresolftalexon		1,79	0,05	3,3	8	0													8			
(3) Photom. with arsenazo III		1,81	0,06	3,5	36	0													36			

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(4) Calcium	[mmol/L]				65							0									65	64	98%	
Samples and groups																								
Sample A		1,80	0,04	2,5	65							0	CRV	1,797	0,027	8%	1,65	1,95		65	64	98%		
(4) Photomet. with NM-BAPTA		1,81	0,02	1,3	21	0															21			
Sample B		2,91	0,06	2,1	65							0	CRV	2,926	0,047	8%	2,69	3,17		65	65	100%		
(2) Phot. with o-cresolftalexon		2,90	0,06	2,3	8	0															8			
(3) Photom. with arsenazo III		2,89	0,06	2,4	36	0															36			
(4) Photomet. with NM-BAPTA		2,94	0,04	1,6	21	0															21			
(5) Inorganic phosphate	[mmol/L]				63							63	61	97%							0			
Samples and groups																								
Sample A		1,52	0,03	2,4	63	CVP	1,52	0,0060	10%	1,36	1,68	63	62	98%							0			
(1) UV-molybdate method		1,52	0,03	2,4	63	0						63												
Sample B		1,03	0,03	2,9	63	CVP	1,03	0,0044	10%	0,927	1,14	63	62	98%							0			
(1) UV-molybdate method		1,03	0,03	2,9	63	0						63												
(6) Iron	[µmol/L]				60							60	58	97%							0			
Samples and groups																								
Sample A		21,3	0,63	2,9	60	CVP	21,2	0,094	15%	18	24,4	60	59	98%							0			
(2) Method with ferrozine/ferene		21,4	0,66	3,1	45	0						45												
(4) Method with TPTZ		21,0	0,50	2,4	15	0						15												
Sample B		41,1	1,1	2,7	60	CVP	41	0,19	15%	34,8	47,2	60	58	97%							0			
(2) Method with ferrozine/ferene		41,3	1,1	2,6	45	0						45												
(4) Method with TPTZ		40,5	0,96	2,4	15	0						15												
(7) Magnesium	[mmol/L]				64							0									64	63	98%	
Samples and groups																								
Sample A		1,19	0,03	2,8	64							0	CRV	1,171	0,018	15%	0,995	1,35		64	63	98%		
(2) Photometry		1,19	0,03	2,7	54	0															54			
(4) UV enzyme method		1,17	0,03	3,3	10	0															10			
Sample B		0,812	0,02	3,3	64							0	CRV	0,783	0,012	15%	0,665	0,901		64	64	100%		
(2) Photometry		0,818	0,02	3,0	54	0															54			
(4) UV enzyme method		0,784	0,02	3,1	10	0															10			
(8) Lithium	[mmol/L]				9							0									9	6	67%	
Samples and groups																								
Sample A		0,970	0,04	4,6	9							0	CRV	1,01	0,015	12%	0,888	1,14		9	6	67%		
(4) Photometry		1,05	0,19	18	6	0															6			
Other					3	0																3		
Sample B		1,47	0,05	4,0	9							0	CRV	1,489	0,022	12%	1,31	1,67		9	9	100%		
(4) Photometry		1,43	0,07	5,2	6	0															6			
Other					3	0																3		
(9) Total protein	[g/L]				67							0									67	67	100%	
Samples and groups																								
Sample A		75,5	1,8	2,4	67							0	CRV	74,9	1,8	9%	68,1	81,7		67	67	100%		
(1) Biuret		75,5	1,8	2,4	67	0															67			
Sample B		71,1	1,7	2,3	67							0	CRV	72,1	1,7	9%	65,6	78,6		67	67	100%		

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Test	[unit]	Comparability					Traceability																
		RoM	SD	CV [%]	N _{tot}	N _{out}	AV	U _{AV}	D _{max}	LL	UL	N _{eva}	N _{suc}	S _{rel}	AV	U _{AV}	D _{max}	LL	UL	N _{eva}	N _{suc}	S _{rel}	
(9) Total protein	[g/L]				67							0									67	67	100%
Samples and groups																							
Sample B		71,1	1,7	2,3	67							0	CRV	72,1	1,7	9%	65,6	78,6		67	67	100%	
(1) Biuret		71,1	1,7	2,3	67	0															67		
(10) Albumin	[g/L]				66							66	66	100%									0
Samples and groups																							
Sample A		47,3	1,7	3,6	66	CVP	47,5	0,23	10%	42,7	52,3	66	66	100%									0
(1) BCG		47,3	1,7	3,6	64	0						64											
Other					2	0						2											
Sample B		44,9	1,5	3,4	66	2x 2 CVP	45,1	0,20	10%	40,5	49,7	66	66	100%									0
(1) BCG		44,9	1,5	3,3	64	0						64											
Other					2	0						2											
(11) Osmolality	[mmol/kg]				19							19	18	95%									0
Samples and groups																							
Sample A		264	3,6	1,4	19	CVP	263	1,1	5%	249	277	19	19	100%									0
(1) Osmometer		264	2,8	1,1	17	0						17											
Other					2	0						2											
Sample B		299	5,6	1,9	19	2x 99 CVP	299	1,1	5%	284	314	19	18	95%									0
(1) Osmometer		300	3,6	1,2	17	0						17											
Other					2	0						2											
(12) Lactate	[mmol/L]				27							27	24	89%									0
Samples and groups																							
Sample A		5,94	0,24	4,0	27	CVP	5,99	0,041	15%	5,09	6,89	27	25	93%									0
(1) UV enzyme method		5,72	0,48	8,4	10	0						10											
(3) Photometric enzyme method		6,00	0,18	3,0	15	0						15											
Other					2	0						2											
Sample B		1,99	0,06	3,2	27	1x 0, 1x 2 CVP	2,01	0,018	15%	1,7	2,32	27	26	96%									0
(1) UV enzyme method		1,96	0,07	3,7	10	0						10											
(3) Photometric enzyme method		2,01	0,04	2,0	15	0						15											
Other					2	0						2											
(13) Bilirubin total	[µmol/L]				70							0											70
Samples and groups																							67
Sample A		23,2	2,7	12	70							0	CRV	21,8	0,50	21%	17,2	26,4		70	67	96%	
(1) Jendrassik-Gróf		24,3	3,6	15	7	0																	7
(2) DCA, DPD		23,1	2,7	11	61	0																	61
Other					2	0																	2
Sample B		28,9	2,8	9,8	70							0	2x 4 CRV	27,7	0,70	21%	21,8	33,6		70	69	99%	
(1) Jendrassik-Gróf		30,4	4,3	14	7	0																	7
(2) DCA, DPD		28,8	2,8	9,8	61	0																	61
Other					2	0																	2

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		RoM	SD	CV [%]	N _{tot}	N _{out}	AV	U _{AV}	D _{max}	LL	UL	N _{eva}	N _{suc}	S _{rel}	AV	U _{AV}	D _{max}	LL	UL	N _{eva}	N _{suc}	S _{rel}
(15) Cholesterol					66							1	1	100%						65	65	100%
Samples and groups	[mmol/L]																					
Sample A		4,17	0,17	4,0	66							1	1	100%						65	65	100%
(1) Enzyme method CHOD-PAP		4,18	0,16	3,9	65	0								CRV	4,187	0,042	9%	3,81	4,57	65		
Other					1	0						1										
																						1x 1/149
Sample B		3,91	0,14	3,5	66							1	1	100%						65	65	100%
(1) Enzyme method CHOD-PAP		3,91	0,13	3,4	65	0								CRV	3,906	0,039	9%	3,55	4,26	65		
Other					1	0						1										
																						1x 1/149
(16) Glucose					71							0								71	69	97%
Samples and groups	[mmol/L]																					
Sample A		13,3	0,37	2,8	71							0		CRV	13,89	0,14	asym.	12,3	15,1	71	70	99%
(1) GOD photometry		13,4	0,39	2,9	21	0														21		
(3) Method with hexokinase		13,3	0,35	2,6	49	0														49		
Other					1	0																1
Sample B		3,81	0,13	3,5	71							0		CRV	3,89	0,039	asym.	3,46	4,21	71	70	99%
(1) GOD photometry		3,86	0,14	3,5	21	0														21		
(3) Method with hexokinase		3,79	0,12	3,1	49	0														49		
Other					1	0																1
(17) Uric acid					67							0								67	67	100%
Samples and groups	[µmol/L]																					
Sample A		301	8,7	2,9	67							0		CRV	305,5	3,1	12%	268	343	67	67	100%
(2) Enzyme-photomet. m.		301	8,7	2,9	67	0														67		
Sample B		458	11	2,5	67							0		CRV	456,3	4,6	12%	401	512	67	67	100%
(2) Enzyme-photomet. m.		458	11	2,5	67	0														67		
(18) Urea					70							0								70	66	94%
Samples and groups	[mmol/L]																					
Sample A		5,13	0,24	4,6	70							0		CRV	5,19	0,052	15%	4,41	5,97	70	67	96%
(1) UV enzymatic m.(GMD)		5,12	0,24	4,7	69	0														69		
Other					1	0																1
Sample B		30,9	1,2	3,8	70							0		CRV	31,96	0,32	15%	27,1	36,8	70	69	99%
(1) UV enzymatic m.(GMD)		30,9	1,2	3,8	69	0														69		
Other					1	0																1
(19) Creatinine					70							0								70	70	100%
Samples and groups	[µmol/L]																					
Sample A		394	15	3,8	70							0		CRV	390,3	3,9	13%	339	442	70	70	100%
(1) Jaffe		391	17	4,3	41	0														41		
(3) Enzyme		397	12	3,0	29	0														29		
Sample B		121	6,1	5,1	70							0		CRV	119,6	1,7	13%	104	136	70	70	100%
(1) Jaffe		122	6,9	5,7	41	0														41		
(3) Enzyme		119	4,5	3,8	29	0														29		

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(20) Triacylglycerols					65							0									65	65	100%
Samples and groups	[mmol/L]																						
Sample A		1,23	0,03	2,8	65							0		CRV	1,244	0,012	15%	1,05	1,44	65	65	100%	
(1) Photometric enzyme (GPO-PAP)		1,23	0,03	2,7	64	0														64			
Other					1	0														1			
Sample B		1,81	0,04	2,5	65							0		CRV	1,771	0,018	15%	1,5	2,04	65	65	100%	
(1) Photometric enzyme (GPO-PAP)		1,80	0,04	2,4	64	0														64			
Other					1	0														1			
														1x2									
														1x2									
(21) ALP					68							65	62	95%							68	65	96%
Samples and groups	[µkat/L]																						
Sample A		9,24	0,93	10	68							65	63	97%	CRV	9,31	0,26	20%	7,44	11,2	68	66	97%
(3) IFCC method; (1) Abbott		8,97	0,31	3,5	10	0	CVPG	9,2	0,10	15%	7,82	10,6											
(3) IFCC method		9,24	0,93	10	68	0															68		
(3) IFCC method; (46) Erba Lachema		9,65	0,82	8,4	6	0	CVPG	9,55	0,36	15%	8,11	11											
(3) IFCC method; (58) Beckman Coulter (AU)		10,3	0,46	4,5	19	0	CVPG	10,1	0,15	15%	8,58	11,7											
(3) IFCC method; (60) Roche		8,57	0,36	4,2	26	0	CVPG	8,36	0,076	15%	7,1	9,62											
Other					7	0																	
								3x 3/12, 1x 3/149, 3x 3/178															
Sample B		3,60	0,27	7,5	68							65	62	95%	CRV	3,62	0,100	20%	2,89	4,35	68	67	99%
(3) IFCC method; (1) Abbott		3,51	0,12	3,4	10	0	CVPG	3,6	0,041	15%	3,06	4,14											
(3) IFCC method		3,60	0,27	7,5	68	0															68		
(3) IFCC method; (46) Erba Lachema		3,91	0,57	15	6	0	CVPG	3,68	0,13	15%	3,12	4,24											
(3) IFCC method; (58) Beckman Coulter (AU)		3,90	0,22	5,8	19	0	CVPG	3,83	0,060	15%	3,25	4,41											
(3) IFCC method; (60) Roche		3,43	0,14	4,0	26	0	CVPG	3,34	0,030	15%	2,83	3,85											
Other					7	0																	
								3x 3/12, 1x 3/149, 3x 3/178															
(22) alpha-amylase					68							1	1	100%							67	66	99%
Samples and groups	[µkat/L]																						
Sample A		4,58	0,25	5,5	68							1	1	100%							67	67	100%
(1) IFCC method		4,58	0,24	5,3	66	0								CRV	4,59	0,13	15%	3,9	5,28	66			
Other					2	0						1									1		
								1x 1/149															
Sample B		5,40	0,29	5,3	68							1	1	100%							67	66	99%
(1) IFCC method		5,40	0,28	5,2	66	0								CRV	5,35	0,16	15%	4,54	6,16	66			
Other					2	0						1									1		
								1x 1/149															
														1x 1/149, 1x 99									
(23) AST					70							0									70	69	99%
Samples and groups	[µkat/L]																						
Sample A		4,25	0,19	4,5	70							0		CRV	4,22	0,096	15%	3,58	4,86	70	70	100%	
(1) IFCC method		4,25	0,19	4,5	70	0															70		
Sample B		1,74	0,08	4,7	70							0		CRV	1,771	0,045	15%	1,5	2,04	70	69	99%	
(1) IFCC method		1,74	0,08	4,7	70	0															70		

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(24) ALT					70							0									70	68	97%
Samples and groups	[µkat/L]																						
Sample A		1,56	0,09	6,3	70							0	CRV	1,536	0,036	15%	1,3	1,77		70	68	97%	
(1) IFCC method		1,56	0,09	6,3	70	0														70			
Sample B		2,18	0,12	5,3	70							0	CRV	2,213	0,051	15%	1,88	2,55		70	70	100%	
(1) IFCC method		2,18	0,12	5,3	70	0														70			
(26) CK					66							0									66	66	100%
Samples and groups	[µkat/L]																						
Sample A		3,30	0,19	5,6	66							0	CRV	3,407	0,089	20%	2,72	4,09		66	66	100%	
(1) IFCC method		3,30	0,19	5,6	66	0														66			
Sample B		6,71	0,47	7,0	66							0	CRV	7,12	0,18	20%	5,69	8,55		66	66	100%	
(1) IFCC method		6,71	0,47	7,0	66	0														66			
(27) gamma-GT					68							0									68	67	99%
Samples and groups	[µkat/L]																						
Sample A		1,64	0,05	3,4	68							0									68	67	99%
(1) IFCC method		1,64	0,05	3,3	67	0							CRV	1,696	0,044	15%	1,44	1,96		67			
Other					1	0															1		
Sample B		1,28	0,03	3,1	68							0									68	68	100%
(1) IFCC method		1,28	0,03	2,9	67	0							CRV	1,32	0,038	15%	1,12	1,52		67			
Other					1	0															1		
(28) LD					52							0									52	52	100%
Samples and groups	[µkat/L]																						
Sample A		6,67	0,22	3,2	52							0	CRV	6,59	0,16	18%	5,4	7,78		52	52	100%	
(3) IFCC method		6,67	0,22	3,2	52	0														52			
Sample B		6,07	0,20	3,3	52							0	CRV	6,04	0,13	18%	4,95	7,13		52	52	100%	
(3) IFCC method		6,07	0,20	3,3	52	0														52			
(29) Lipase					32							29	28	97%									0
Samples and groups	[µkat/L]																						
Sample A		0,542	0,03	7,2	32							29	28	97%									0
(0) Not specified; (58) Beckman Coulter (AU)		0,539	0,03	5,6	11	0	CVPG	0,546	0,018	24%	0,414	0,678								11			
(0) Not specified; (60) Roche		0,544	0,02	4,0	13	0	CVPG	0,542	0,073	24%	0,411	0,673								13			
Other					8	0						5											
								3x 0/1, 1x 0/12, 1x 0/149, 1x 0/178, 2x 0/179															
Sample B		1,19	0,06	5,4	32							29	29	100%									0
(0) Not specified; (58) Beckman Coulter (AU)		1,22	0,05	4,2	11	0	CVPG	1,24	0,029	24%	0,942	1,54								11			
(0) Not specified; (60) Roche		1,17	0,03	2,8	13	0	CVPG	1,17	0,015	24%	0,889	1,46								13			
Other					8	0						5											
								3x 0/1, 1x 0/12, 1x 0/149, 1x 0/178, 2x 0/179															
(30) Cholinesterase					26							26	23	88%									0
Samples and groups	[µkat/L]																						
Sample A		126	5,6	4,4	26							26	24	92%									0
(1) Standard method		126	5,6	4,4	26	0	CVP	127	1,1	12%	111	143								26			
Sample B		119	5,8	4,9	26							26	23	88%									0

Summary statistics - quantitative results

(Groups: measurement principle)

Filter: Slovakia, minimal size of the groups n = 5

EQA round: AKS2/22 - Basic Clinical Chemistry - Serum

Deadline: 08.04.2022

Test	[unit]	Comparability					Traceability																
		RoM	SD	CV [%]	N _{tot}	N _{out}	AV	U _{AV}	D _{max}	LL	UL	N _{eva}	N _{suc}	S _{rel}	AV	U _{AV}	D _{max}	LL	UL	N _{eva}	N _{suc}	S _{rel}	
(30) Cholinesterase	[µkat/L]				26							26	23	88%									0
Samples and groups																							
Sample B		119	5,8	4,9	26							26	23	88%									0
(1) Standard method		119	5,8	4,9	26	0	CVP	120	1,1	12%	105	135											0
(31) Albumin (elpho)	[-]				11							11	11	100%									0
Samples and groups																							
Sample A		0,611	0,03	5,5	11		CVP	0,627	0,012	15%	0,532	0,722											0
(0) Not specified		0,611	0,03	5,5	11	0																	0
Sample B		0,617	0,02	4,4	11		CVP	0,628	0,012	15%	0,533	0,723											0
(0) Not specified		0,617	0,02	4,4	11	0																	0
(32) gamma-globuline (elpho)	[-]				11							11	11	100%									0
Samples and groups																							
Sample A		0,135	0,00	7,0	11		CVP	0,134	,0037	30%	0,093	0,175											0
(0) Not specified		0,135	0,00	7,0	11	0																	0
Sample B		0,137	0,01	7,7	11		CVP	0,136	,0039	30%	0,095	0,177											0
(0) Not specified		0,137	0,01	7,7	11	0																	0
(35) alpha-amylase pancreatic	[µkat/L]				12							12	12	100%									0
Samples and groups																							
Sample A		3,87	0,19	4,9	12		CVP	3,89	0,041	18%	3,18	4,6											0
(1) With IFCC calibration		3,87	0,19	4,9	12	0																	0
Sample B		4,63	0,24	5,2	12		CVP	4,66	0,051	18%	3,82	5,5											0
(1) With IFCC calibration		4,63	0,24	5,2	12	0																	0
(36) Calcium ionised	[mmol/L]				7							7	6	86%									0
Samples and groups																							
Sample A		1,05	0,03	3,6	7		CVP	1,05	0,012	10%	0,945	1,16											0
(2) Direct ISE		1,05	0,03	3,6	7	0																	0
Sample B		1,89	0,07	4,0	7		CVP	1,9	0,024	10%	1,71	2,09											0
(2) Direct ISE		1,89	0,07	4,0	7	0																	0

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End of report

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