

Summary statistics - quantitative results

(Groups: measurement principle)

Filter: Slovakia, minimal size of groups n = 5

EQA round: AKS1/19 - Basic Clinical Chemistry - Serum

Dead line: 01.02.2019

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 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}	AV	U _{AV}	D _{max}	LL	UL	N _{eva}	N _{suc}	S _{rel}	
(1) Sodium					34									0							34	33	97%
Samples and groups	[mmol/L]																						
Sample A		135	2,5	1,8	34									0	CRV	136,3	2,0	5%	129	144	34	33	97%
(2) Indirect ISE		135	1,9	1,4	26	0															26		
(3) Direct ISE		137	5,0	3,7	7	0															7		
Other					1	0															1		
															1x 99								
Sample B		131	2,4	1,8	34									0	CRV	132,1	2,0	5%	125	139	34	33	97%
(2) Indirect ISE		130	1,8	1,4	26	0															26		
(3) Direct ISE		132	5,0	3,8	7	0															7		
Other					1	0															1		
															1x 99								
(2) Potassium					34									0							34	34	100%
Samples and groups	[mmol/L]																						
Sample A		6,80	0,15	2,3	34									0	CRV	6,788	0,100	7%	6,31	7,27	34	34	100%
(2) Indirect ISE		6,79	0,15	2,3	26	0															26		
(3) Direct ISE		6,87	0,12	1,7	7	0															7		
Other					1	0															1		
															1x 99								
Sample B		4,94	0,11	2,2	34									0	CRV	4,924	0,074	7%	4,57	5,27	34	34	100%
(2) Indirect ISE		4,94	0,10	2,1	26	0															26		
(3) Direct ISE		4,96	0,19	3,9	7	0															7		
Other					1	0															1		
															1x 99								
(3) Chloride					34									34	34	100%					0		
Samples and groups	[mmol/L]																						
Sample A		121	3,0	2,5	34		CVP	121	0,55	7%	112	130	34	34	100%						0		
(3) Indirect ISE		121	2,0	1,7	25	0								25									
(4) Direct ISE		121	2,8	2,3	6	0								6									
Other					3	0								3									
							3x 2																
Sample B		114	2,4	2,1	34		CVP	114	0,48	7%	106	122	34	34	100%						0		
(3) Indirect ISE		114	2,0	1,7	25	0								25									
(4) Direct ISE		113	2,8	2,5	6	0								6									
Other					3	0								3									
							3x 2																
(4) Calcium					33									0							33	33	100%
Samples and groups	[mmol/L]																						
Sample A		2,99	0,06	2,0	33									0	CRV	2,956	0,045	8%	2,71	3,2	33	33	100%
(2) Phot. with o-cresolftalexon		2,98	0,05	2,0	5	0															5		
(3) Photom. with arsenazo III		2,99	0,05	1,9	22	0															22		

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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}	
(4) Calcium	[mmol/L]				33							0									33	33	100%
Samples and groups																							
Sample A		2,99	0,06	2,0	33							0		CRV	2,956	0,045	8%	2,71	3,2	33	33	100%	
(4) Photomet. with NM-BAPTA		2,95	0,04	1,5	6	0															6		
Sample B		3,47	0,07	2,3	33							0		CRV	3,488	0,052	8%	3,2	3,77	33	33	100%	
(2) Phot. with o-cresolftalexon		3,48	0,03	1,1	5	0															5		
(3) Photom. with arsenazo III		3,46	0,08	2,4	22	0															22		
(4) Photomet. with NM-BAPTA		3,54	0,12	3,4	6	0															6		
(5) Inorganic phosphate	[mmol/L]				32							32	29	91%							0		
Samples and groups																							
Sample A		1,72	0,04	2,4	32	CVP	1,73	,0096	10%	1,55	1,91	32	31	97%							0		
(1) UV-molybdate method		1,72	0,04	2,8	29	0						29											
Other					3	0						3											
Sample B		1,01	0,03	3,7	32	^{3x2} CVP	1,01	,0068	10%	0,909	1,12	32	29	91%							0		
(1) UV-molybdate method		1,01	0,04	4,1	29	0						29											
Other					3	0						3											
(6) Iron	[µmol/L]				29							29	29	100%							0		
Samples and groups																							
Sample A		32,3	0,68	2,1	29	CVP	32,6	0,13	15%	27,7	37,5	29	29	100%							0		
(2) Method with ferrozine/ferene		32,4	0,48	1,5	17	0						17											
(4) Method with TPTZ		32,2	0,96	3,0	12	0						12											
Sample B		20,5	0,76	3,7	29	CVP	20,8	0,11	15%	17,6	24	29	29	100%							0		
(2) Method with ferrozine/ferene		20,6	0,78	3,8	17	0						17											
(4) Method with TPTZ		20,4	0,77	3,8	12	0						12											
(7) Magnesium	[mmol/L]				33							0									33	31	94%
Samples and groups																							
Sample A		1,86	0,08	4,5	33							0		CRV	1,859	0,028	15%	1,58	2,14	33	33	100%	
(2) Photometry		1,86	0,08	4,6	32	0															32		
Other					1	0																1	
Sample B		0,797	0,01	2,3	33							0		^{1x4} CRV	0,755	0,011	15%	0,641	0,869	33	31	94%	
(2) Photometry		0,797	0,01	2,3	32	0																32	
Other					1	0																1	
(8) Lithium	[mmol/L]				6							6	6	100%							0		
Samples and groups																							
Sample A		0,770	0,03	3,9	6	CVP	0,776	0,018	12%	0,682	0,87	6	6	100%							0		
(4) Photometry		0,765	0,02	2,9	5	0						5											
Other					1	0						1											
Sample B		1,43	0,08	5,7	6	^{1x3} CVP	1,43	0,036	12%	1,25	1,61	6	6	100%							0		
(4) Photometry		1,42	0,06	4,7	5	0						5											
Other					1	0						1											

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Dead line: 01.02.2019

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					35							0									35	35	100%		
Samples and groups	[g/L]																								
Sample A		68,6	1,6	2,3	35							0	CRV	69,46	0,82	9%	63,2	75,8		35	35	100%			
(1) Biuret		68,6	1,6	2,3	35	0															35				
Sample B		65,8	1,4	2,1	35							0	CRV	66,01	0,78	9%	60	72		35	35	100%			
(1) Biuret		65,8	1,4	2,1	35	0															35				
(10) Albumin					32							32	32	100%									0		
Samples and groups	[g/L]																								
Sample A		44,4	1,4	3,2	32	CVP	44,9	0,23	10%	40,4	49,4	32	32	100%									0		
(1) BCG		44,4	1,4	3,2	32	0						32													
Sample B		41,9	1,6	3,8	32	CVP	42,1	0,25	10%	37,8	46,4	32	32	100%									0		
(1) BCG		41,9	1,6	3,8	32	0						32													
(11) Osmolality					12							12	11	92%									0		
Samples and groups	[mmol/kg]																								
Sample A		316	4,1	1,3	12	CVP	317	1,6	5%	301	333	12	11	92%									0		
(1) Osmometer		316	4,1	1,3	12	0						12													
Sample B		310	5,2	1,7	12	CVP	311	1,4	5%	295	327	12	12	100%									0		
(1) Osmometer		310	5,2	1,7	12	0						12													
(12) Lactate					20							20	19	95%									0		
Samples and groups	[mmol/L]																								
Sample A		4,96	0,28	5,6	20	CVP	4,91	0,049	15%	4,17	5,65	20	20	100%									0		
(3) Photometric enzyme method		4,97	0,21	4,2	14	0						14													
Other					6	0						6													
Sample B		1,92	0,08	4,7	20	CVP	1,89	0,022	15%	1,6	2,18	20	19	95%									0		
(3) Photometric enzyme method		1,90	0,06	3,3	14	0						14													
Other					6	0						6													
(13) Bilirubin total					35							0											35	34	97%
Samples and groups	[µmol/L]																								
Sample A		77,2	3,9	5,1	35							0	CRV	73,9	1,7	21%	58,3	89,5		35	34	97%			
(2) DCA, DPD		77,1	3,6	4,7	32	0																	32		
Other					3	0																	3		
Sample B		26,6	2,1	7,9	35							0	CRV	25,4	0,70	21%	20	30,8		35	35	100%			
(2) DCA, DPD		26,6	2,0	7,6	32	0																	32		
Other					3	0																	3		
(15) Cholesterol					33							0											33	33	100%
Samples and groups	[mmol/L]																								
Sample A		3,90	0,14	3,5	33							0											33	33	100%
(1) Enzyme method CHOD-PAP		3,90	0,14	3,5	33	0							CRV	4,027	0,040	9%	3,66	4,39		33					
Sample B		3,72	0,14	3,7	33							0											33	33	100%
(1) Enzyme method CHOD-PAP		3,72	0,14	3,7	33	0							CRV	3,696	0,037	9%	3,36	4,03		33					

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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}							
(16) Glucose					36							0				36	35	97%			
Samples and groups	[mmol/L]																				
Sample A		11,6	0,34	3,0	36							0	CRV	11,32	0,11	8%	10,4	12,3	36	36	100%
(1) GOD photometry		11,7	0,41	3,5	13	0													13		
(3) Method with hexokinase		11,5	0,25	2,2	22	0													22		
Other					1	0													1		
Sample B		4,40	0,14	3,3	36							0	CRV	4,29	0,043	8%	3,94	4,64	36	35	97%
(1) GOD photometry		4,49	0,14	3,1	13	0													13		
(3) Method with hexokinase		4,36	0,13	2,9	22	0													22		
Other					1	0													1		
													1x2								
(17) Uric acid					34							0							34	33	97%
Samples and groups	[µmol/L]																				
Sample A		367	17	4,6	34							0	CRV	361,2	3,6	12%	317	405	34	34	100%
(2) Enzyme-photomet. m.		367	17	4,6	34	0													34		
Sample B		463	16	3,6	34							0	CRV	454,5	4,5	12%	399	510	34	33	97%
(2) Enzyme-photomet. m.		463	16	3,6	34	0													34		
(18) Urea					35							0							35	34	97%
Samples and groups	[mmol/L]																				
Sample A		19,9	0,61	3,0	35							0	CRV	19,92	0,20	15%	16,9	23	35	35	100%
(1) UV enzymatic m.(GMD)		19,9	0,61	3,0	35	0													35		
Sample B		30,6	0,98	3,2	35							0	CRV	31,03	0,31	15%	26,3	35,7	35	34	97%
(1) UV enzymatic m.(GMD)		30,6	0,98	3,2	35	0													35		
(19) Creatinine					34							0							34	34	100%
Samples and groups	[µmol/L]																				
Sample A		343	10	3,0	34							0	CRV	343,3	3,4	13%	298	388	34	34	100%
(1) Jaffe		340	11	3,4	19	0													19		
(3) Enzyme		347	8,6	2,5	15	0													15		
Sample B		385	13	3,4	34							0	CRV	381,6	3,8	13%	331	432	34	34	100%
(1) Jaffe		379	14	3,7	19	0													19		
(3) Enzyme		391	9,1	2,3	15	0													15		
(20) Triglycerides					33							0							33	32	97%
Samples and groups	[mmol/L]																				
Sample A		0,985	0,07	7,5	33							0	CRV	0,955	0,0100	15%	0,811	1,1	33	33	100%
(1) Photometric enzyme (GPO-PAP)		0,985	0,07	7,5	33	0													33		
Sample B		1,69	0,06	4,1	33							0	CRV	1,67	0,022	15%	1,41	1,93	33	32	97%
(1) Photometric enzyme (GPO-PAP)		1,69	0,06	4,1	33	0													33		
(21) ALP					34							0							34	32	94%
Samples and groups	[µkat/L]																				
Sample A		6,78	1,1	16	34							0	CRV	6,536	0,018	24%	4,96	8,11	34	33	97%
(3) IFCC method		6,78	1,1	16	34	0													34		
Sample B		3,64	0,56	15	34							0	CRV	3,522	0,095	24%	2,67	4,37	34	32	94%
(3) IFCC method		3,64	0,56	15	34	0													34		

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		RoM	SD	CV [%]	N _{tot}	N _{out}	AV	U _{AV}	D _{max}	LL	UL	N _{eva}	N _{suc}	S _{rel}					
(22) alpha-amylase					35							0			35	35	100%		
Samples and groups	[µkat/L]																		
Sample A		5,00	0,26	5,2	35							0			35	35	100%		
(1) IFCC method		5,00	0,26	5,2	35	0							CRV	5,084	0,030	15%	4,32	5,85	
Sample B		7,22	0,37	5,1	35							0			35	35	100%		
(1) IFCC method		7,22	0,37	5,1	35	0							CRV	7,265	0,20	15%	6,17	8,36	
(23) AST					35							0			35	33	94%		
Samples and groups	[µkat/L]																		
Sample A		2,37	0,14	5,9	35							0		CRV	2,444	0,017	15%	2,07	2,82
(1) IFCC method		2,37	0,14	5,9	35	0									35				
Sample B		1,63	0,09	5,7	35							0		CRV	1,684	0,037	15%	1,43	1,94
(1) IFCC method		1,63	0,09	5,7	35	0									35	34	97%		
(24) ALT					36							0			36	35	97%		
Samples and groups	[µkat/L]																		
Sample A		3,78	0,12	3,2	36							0		CRV	3,847	0,020	15%	3,26	4,43
(1) IFCC method		3,78	0,12	3,2	36	0									36				
Sample B		1,85	0,06	3,4	36							0		CRV	1,829	0,048	15%	1,55	2,11
(1) IFCC method		1,85	0,06	3,4	36	0									36				
(26) CK					34							0			34	34	100%		
Samples and groups	[µkat/L]																		
Sample A		8,53	0,49	5,8	34							0		CRV	8,555	0,098	20%	6,84	10,3
(1) IFCC method		8,53	0,49	5,8	34	0									34				
Sample B		5,93	0,38	6,3	34							0		CRV	6,303	0,16	20%	5,04	7,57
(1) IFCC method		5,93	0,38	6,3	34	0									34	34	100%		
(27) gamma-GT					34							0			34	33	97%		
Samples and groups	[µkat/L]																		
Sample A		3,12	0,12	4,0	34							0		CRV	3,176	,0100	15%	2,69	3,66
(1) IFCC method		3,12	0,12	3,8	33	0									33				
Other					1	0									1				
Sample B		1,30	0,04	3,5	34							0		CRV	1,375	0,038	15%	1,16	1,59
(1) IFCC method		1,30	0,04	3,4	33	0									33				
Other					1	0									1				
													1x 99						
(28) LD					29							0			29	29	100%		
Samples and groups	[µkat/L]																		
Sample A		4,27	0,16	3,7	29							0		CRV	4,343	0,023	18%	3,56	5,13
(3) IFCC method		4,27	0,16	3,7	29	0									29				
Sample B		5,35	0,16	3,0	29							0		CRV	5,418	0,13	18%	4,44	6,4
(3) IFCC method		5,35	0,16	3,0	29	0									29				
(29) Lipase					20							17	17	100%					
Samples and groups	[µkat/L]																		
Sample A		2,18	0,31	14	20							17	17	100%					
(0) Not specified; (58) Beckman Coulter (Olympus)		2,42	0,09	4,0	8	0	CVPG	2,44	0,037	24%	1,85	3,03			8				

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(29) Lipase					20							17	17	100%									0
Samples and groups	[µkat/L]																						
Sample A		2,18	0,31	14	20							17	17	100%									0
(0) Not specified; (60) Roche		2,03	0,30	15	8	0	CVPG	2,15	0,10	24%	1,63	2,67	8										
Other					4	0							1										
								1x 0/12, 1x 0/177, 2x 0/178															
Sample B		1,30	0,17	13	20							17	17	100%									0
(0) Not specified; (58) Beckman Coulter (Olympus)		1,44	0,05	3,6	8	0	CVPG	1,45	0,020	24%	1,1	1,8	8										
(0) Not specified; (60) Roche		1,23	0,14	11	8	0	CVPG	1,28	0,049	24%	0,972	1,59	8										
Other					4	0							1										
								1x 0/12, 1x 0/177, 2x 0/178															
(30) Cholinesterase					19							19	19	100%									0
Samples and groups	[µkat/L]																						
Sample A		138	4,1	3,0	19							19	19	100%									0
(1) Standard method		138	4,1	3,0	19	0	CVP	139	1,3	12%	122	156	19										
Sample B		110	3,3	3,0	19							19	19	100%									0
(1) Standard method		110	3,3	3,0	19	0	CVP	111	1,1	12%	97,6	125	19										
(31) Albumin (elpho)					10							10	10	100%									0
Samples and groups	[-]																						
Sample A		0,628	0,05	8,9	10		CVP	0,636	0,014	15%	0,54	0,732	10	10	100%								0
(0) Not specified		0,628	0,05	8,9	10	0							10										
Sample B		0,615	0,04	7,7	10		CVP	0,621	0,012	15%	0,527	0,715	10	10	100%								0
(0) Not specified		0,615	0,04	7,7	10	0							10										
(32) gamma-globuline (elpho)					10							10	10	100%									0
Samples and groups	[-]																						
Sample A		0,128	0,01	15	10		CVP	0,126	0,0038	30%	0,088	0,164	10	10	100%								0
(0) Not specified		0,128	0,01	15	10	0							10										
Sample B		0,139	0,02	15	10		CVP	0,138	0,0043	30%	0,096	0,18	10	10	100%								0
(0) Not specified		0,139	0,02	15	10	0							10										
(35) alpha-amylase pancreatic					17							17	17	100%									0
Samples and groups	[µkat/L]																						
Sample A		4,27	0,12	2,9	17		CVP	4,27	0,043	10%	3,84	4,7	17	17	100%								0
(1) With IFCC calibration		4,27	0,12	2,9	17	0							17										
Sample B		6,46	0,21	3,3	17		CVP	6,45	0,066	10%	5,8	7,1	17	17	100%								0
(1) With IFCC calibration		6,46	0,21	3,3	17	0							17										
(36) Calcium ionised					4							4	3	75%									0
Samples and groups	[mmol/L]																						
Sample A		1,80	0,04	2,5	4		CVP	1,82	0,027	10%	1,63	2,01	4	4	100%								0
Other					4	0							4										
								4x 2															
Sample B		2,20	0,23	10	4		CVP	2,31	0,047	10%	2,07	2,55	4	3	75%								0
Other					4	0							4										
								4x 2															