

EQA round: IFT1/26 - Immunophenotypisation

Deadline: 27.4.2026

Setup: groups - R (manufacturer of kit); minimal size of the groups n = 5

RoM = robust average	AV = assigned value	D _{max} = acceptable difference
SD = standard deviation	CVP = consensus of all participants	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				
(253) T lymphocytes (CD3+)	[%]				101							101	101	100	
Sample A		73,1	1,4	1,9	101		CVP	73,1	0,35	7%	67,9	78,3	101	101	100
(12) Beckman Coulter		73,1	1,6	2,2	61	0							61		
(88) Becton Dickinson		73,1	0,8	1,1	12	0							12		
(177) Mindray		72,5	1,1	1,5	6	0							6		
(190) Exbio Praha		73,1	1,2	1,7	16	0							16		
Other					6	0							6		
							3x 36, 3x 999								
Sample B		89	1,3	1,5	101		CVP	89	0,33	7%	82,7	95,3	101	101	100
(12) Beckman Coulter		89	1,3	1,5	61	0							61		
(88) Becton Dickinson		89,6	1,8	2	12	0							12		
(177) Mindray		87,8	0,59	0,68	6	0							6		
(190) Exbio Praha		88,9	1,7	1,9	16	0							16		
Other					6	0							6		
							3x 36, 3x 999								
(254) Th lymphocytes (CD4+)	[%]				101							101	100	99	
Sample A		41,2	1,3	3,2	101		CVP	41,2	0,32	10%	37	45,4	101	100	99
(12) Beckman Coulter		41,2	1,5	3,5	61	0							61		
(88) Becton Dickinson		40,8	1,5	3,6	12	0							12		
(177) Mindray		41,4	1,7	4	6	0							6		
(190) Exbio Praha		41,6	0,73	1,8	14	0							14		
Other					8	0							8		
							3x 36, 2x 166, 3x 999								
Sample B		65,3	1,4	2,2	101		CVP	65,3	0,35	10%	58,7	71,9	101	101	100
(12) Beckman Coulter		65,4	1,5	2,3	61	0							61		
(88) Becton Dickinson		65,2	1,7	2,7	12	0							12		
(177) Mindray		66	2,1	3,2	6	0							6		
(190) Exbio Praha		65,4	1,1	1,7	14	0							14		
Other					8	0							8		
							3x 36, 2x 166, 3x 999								
(255) T lymphocytes (CD8+)	[%]				101							101	100	99	
Sample A		29,5	0,86	2,9	101		CVP	29,5	0,21	17%	24,4	34,6	101	101	100
(12) Beckman Coulter		29,5	1	3,4	61	0							61		
(88) Becton Dickinson		29,8	0,8	2,7	12	0							12		
(177) Mindray		29,4	0,52	1,8	6	0							6		
(190) Exbio Praha		29,7	0,77	2,6	14	0							14		
Other					8	0							8		
							3x 36, 2x 166, 3x 999								
Sample B		20,8	0,89	4,3	101		CVP	20,8	0,22	17%	17,2	24,4	101	100	99
(12) Beckman Coulter		20,8	0,89	4,3	61	0							61		
(88) Becton Dickinson		21,8	1	4,7	12	0							12		
(177) Mindray		20,7	0,44	2,1	6	0							6		
(190) Exbio Praha		20,7	0,59	2,9	14	0							14		
Other					8	0							8		
							3x 36, 2x 166, 3x 999								
(256) B lymphocytes	[%]				101							101	99	98	
Sample A		16	1	6,3	101		CVP	16	0,25	30%	11,2	20,8	101	100	99
(12) Beckman Coulter		15,9	1,1	7	61	0							61		
(36) Immunotech		15,1	1,1	7,4	5	0							5		
(88) Becton Dickinson		16,6	0,81	4,9	12	0							12		
(177) Mindray		16	0,96	6	6	0							6		
(190) Exbio Praha		16,2	0,56	3,4	14	0							14		
Other					3	0							3		
							3x 999								
Sample B		7,33	0,58	7,9	101		CVP	7,33	0,14	30%	5,13	9,53	101	99	98
(12) Beckman Coulter		7,35	0,58	7,9	61	0							61		
(36) Immunotech		7,35	0,22	3	5	0							5		
(88) Becton Dickinson		7,4	0,8	11	12	0							12		
(177) Mindray		7,01	0,74	11	6	0							6		
(190) Exbio Praha		7,35	0,32	4,3	14	0							14		
Other					3	0							3		
							3x 999								

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							AV	U _{AV}	D _{max}	LL	UL				
(257) NK cells	[%]				101							101	97	96	
Sample A		9,27	0,91	9,8	101		CVP	9,27	0,22	26%	6,85	11,7	101	99	98
(12) Beckman Coulter		9,38	0,82	8,7	60	0							60		
(88) Becton Dickinson		9,22	0,97	11	13	0							13		
(177) Mindray		9,1	1	11	6	0							6		
(190) Exbio Praha		9,02	1,4	15	15	0							15		
Other					7	0							7		
								3x 36, 1x 64, 3x 999							
Sample B		2,31	0,75	32	101		CVP	2,31	0,18	64%	0,831	3,79	101	97	96
(12) Beckman Coulter		2,42	0,64	26	60	0							60		
(88) Becton Dickinson		2,16	0,85	39	13	0							13		
(177) Mindray		2,09	0,76	36	6	0							6		
(190) Exbio Praha		1,99	1	52	15	0							15		
Other					7	0							7		
								3x 36, 1x 64, 3x 999							
(638) Isotype switched memory B lymphocytes (CD19+CD27+IgD-)	[% of B]				10							10	9	90	
Sample A		24	9,6	40	10		CVP	24	7,4	80%	4,8	43,2	10	10	100
(12) Beckman Coulter		23	11	47	7	0							7		
Other					3	0							3		
								1x 0, 1x 36, 1x 88							
Sample B		18,1	5,5	30	10		CVP	18,1	4,3	60%	7,24	29	10	9	90
(12) Beckman Coulter		17,8	6,7	38	7	0							7		
Other					3	0							3		
								1x 0, 1x 36, 1x 88							
(642) T regulatory lymphocytes (CD3+CD4+CD25+CD127low)	[% of Th]				16							16	15	94	
Sample A		11,2	3	27	16		CVP	11,2	1,8	54%	5,15	17,3	16	15	94
(12) Beckman Coulter		12	3,4	28	9	0							9		
Other					7	0							7		
								3x 0, 1x 36, 1x 88, 1x 190, 1x 999							
Sample B		12	3,8	32	16		CVP	12	2,3	64%	4,32	19,7	16	15	94
(12) Beckman Coulter		12,8	2	16	9	0							9		
Other					7	0							7		
								3x 0, 1x 36, 1x 88, 1x 190, 1x 999							
(630) WBC	[·10 ⁹ /L]				64							64	64	100	
Sample A		3,26	0,12	3,7	64		CVP	3,26	0,037	15%	2,77	3,75	64	64	100
(12) Beckman Coulter		3,12	0,11	3,7	7	0							7		
(63) Sysmex		3,3	0,11	3,4	42	0							42		
(177) Mindray		3,25	0,078	2,4	11	0							11		
Other					4	0							4		
								1x 1, 1x 176, 1x 179, 1x 190							
Sample B		2,64	0,11	4,2	64		CVP	2,64	0,034	15%	2,24	3,04	64	64	100
(12) Beckman Coulter		2,5	0,15	5,9	7	0							7		
(63) Sysmex		2,66	0,095	3,6	42	0							42		
(177) Mindray		2,66	0,11	4,1	11	0							11		
Other					4	0							4		
								1x 1, 1x 176, 1x 179, 1x 190							
(631) Lymphocytes	[·10 ⁹ /L]				67							67	65	97	
Sample A		1,47	0,16	11	67		CVP	1,47	0,049	22%	1,14	1,8	67	65	97
(12) Beckman Coulter		1,35	0,097	7,2	10	0							10		
(63) Sysmex		1,55	0,16	10	39	0							39		
(177) Mindray		1,38	0,074	5,4	8	0							8		
Other					10	0							10		
								2x 0, 1x 1, 1x 36, 1x 88, 1x 176, 1x 179, 2x 190, 1x 999							
Sample B		0,595	0,089	15	67		CVP	0,595	0,027	30%	0,416	0,774	67	65	97
(12) Beckman Coulter		0,516	0,057	11	10	0							10		
(63) Sysmex		0,647	0,057	8,8	39	0							39		
(177) Mindray		0,515	0,052	10	8	0							8		
Other					10	0							10		
								2x 0, 1x 1, 1x 36, 1x 88, 1x 176, 1x 179, 2x 190, 1x 999							
(632) T lymphocytes (CD3+) (abs. count)	[·10 ⁹ /L]				66							66	62	94	
Sample A		1,08	0,13	12	66		CVP	1,08	0,038	24%	0,82	1,34	66	62	94
(12) Beckman Coulter		1,08	0,13	12	35	0							35		
(63) Sysmex		1,14	0,23	20	8	0							8		
(88) Becton Dickinson		1,09	0,054	5	5	0							5		
(190) Exbio Praha		1,11	0,13	11	7	0							7		
Other					11	0							11		
								4x 0, 2x 36, 2x 177, 3x 999							

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							AV	U _{AV}	D _{max}	LL	UL				
Sample B		0,527	0,079	15	66		CVP	0,527	0,024	30%	0,368	0,686	66	64	97
(12) Beckman Coulter		0,536	0,079	15	35	0							35		
(63) Sysmex		0,595	0,052	8,7	8	0							8		
(88) Becton Dickinson		0,53	0,045	8,4	5	0							5		
(190) Exbio Praha		0,547	0,093	17	7	0							7		
Other					11	0							11		
							4x 0, 2x 36, 2x 177, 3x 999								
(633) Th lymphocytes (CD4+) (abs. count)	[·10⁹/L]				66								66	62	94
Sample A		0,605	0,073	12	66		CVP	0,605	0,022	24%	0,459	0,751	66	62	94
(12) Beckman Coulter		0,608	0,078	13	35	0							35		
(63) Sysmex		0,601	0,11	18	8	0							8		
(88) Becton Dickinson		0,618	0,042	6,7	5	0							5		
(190) Exbio Praha		0,625	0,067	11	7	0							7		
Other					11	0							11		
							4x 0, 2x 36, 2x 177, 3x 999								
Sample B		0,386	0,056	15	66		CVP	0,386	0,017	30%	0,27	0,502	66	64	97
(12) Beckman Coulter		0,392	0,056	14	35	0							35		
(63) Sysmex		0,43	0,045	10	8	0							8		
(88) Becton Dickinson		0,387	0,025	6,3	5	0							5		
(190) Exbio Praha		0,404	0,069	17	7	0							7		
Other					11	0							11		
							4x 0, 2x 36, 2x 177, 3x 999								
(634) T lymphocytes (CD8+) (abs. count)	[·10⁹/L]				66								66	63	95
Sample A		0,433	0,049	11	66		CVP	0,433	0,015	22%	0,337	0,529	66	64	97
(12) Beckman Coulter		0,434	0,052	12	35	0							35		
(63) Sysmex		0,445	0,052	12	8	0							8		
(88) Becton Dickinson		0,437	0,013	2,9	5	0							5		
(190) Exbio Praha		0,45	0,059	13	7	0							7		
Other					11	0							11		
							4x 0, 2x 36, 2x 177, 3x 999								
Sample B		0,123	0,02	16	66		CVP	0,123	0,006	32%	0,083	0,163	66	63	95
(12) Beckman Coulter		0,125	0,018	14	35	0							35		
(63) Sysmex		0,144	0,009	6,2	8	0							8		
(88) Becton Dickinson		0,122	0,015	12	5	0							5		
(190) Exbio Praha		0,126	0,022	17	7	0							7		
Other					11	0							11		
							4x 0, 2x 36, 2x 177, 3x 999								
(635) B lymphocytes (abs. count)	[·10⁹/L]				66								66	59	89
Sample A		0,232	0,031	13	66		CVP	0,232	0,009	26%	0,171	0,293	66	61	92
(12) Beckman Coulter		0,233	0,032	14	35	0							35		
(63) Sysmex		0,25	0,045	18	8	0							8		
(88) Becton Dickinson		0,247	0,025	9,9	5	0							5		
(190) Exbio Praha		0,244	0,025	10	7	0							7		
Other					11	0							11		
							4x 0, 2x 36, 2x 177, 3x 999								
Sample B		0,043	0,007	17	66		CVP	0,043	0,002	34%	0,028	0,058	66	61	92
(12) Beckman Coulter		0,045	0,008	17	35	0							35		
(63) Sysmex		0,047	0,004	9,4	8	0							8		
(88) Becton Dickinson		0,04	0	0	5	0							5		
(190) Exbio Praha		0,045	0,008	18	7	0							7		
Other					11	0							11		
							4x 0, 2x 36, 2x 177, 3x 999								
(636) NK cells (abs. count)	[·10⁹/L]				66								66	59	89
Sample A		0,139	0,021	15	66		CVP	0,139	0,006	30%	0,097	0,181	66	61	92
(12) Beckman Coulter		0,14	0,022	16	34	0							34		
(63) Sysmex		0,15	0,015	9,9	8	0							8		
(88) Becton Dickinson		0,133	0,004	2,8	5	0							5		
(190) Exbio Praha		0,145	0,022	15	7	0							7		
Other					12	0							12		
							4x 0, 1x 9, 2x 36, 2x 177, 3x 999								
Sample B		0,014	0,006	44	66		CVP	0,014	0,002	88%	0,001	0,027	66	60	91
(12) Beckman Coulter		0,015	0,007	45	34	0							34		
(63) Sysmex		0,015	0,007	49	8	0							8		
(88) Becton Dickinson		0,012	0,003	25	5	0							5		
(190) Exbio Praha		0,014	0,009	64	7	0							7		
Other					12	0							12		
							4x 0, 1x 9, 2x 36, 2x 177, 3x 999								