

EQA round: IFT1/23 - Immunophenotypisation

Deadline: 1.5.2023

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

RoM = robust average

SD = standard deviation

CV = coefficient of variation

N_{tot} = total number of the resultsN_{out} = number of the results removed before calculation

AV = assigned value

CVP = consensus of all participants

U_{AV} = expanded uncertainty of the assigned value (k = 2)D_{max} = acceptable difference

LL = lower limit

UL = upper limit

N_{eva} = number of the results assessedN_{suc} = number of successful resultsS_{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) CD 3+ T lymphocytes | | [%] | | | 104 | | | | | | | 104 | 98 | 94 | |
| Sample A | | 68,1 | 1,8 | 2,6 | 104 | | CVP | 68,1 | 0,43 | 7% | 63,3 | 72,9 | 104 | 99 | 95 |
| (12) Beckman Coulter | | 68 | 1,7 | 2,5 | 58 | 0 | | | | | | | 58 | | |
| (88) Becton Dickinson | | 67,9 | 2,4 | 3,6 | 16 | 0 | | | | | | | 16 | | |
| (177) Mindray | | 68,3 | 1 | 1,5 | 8 | 0 | | | | | | | 8 | | |
| (190) Exbio Praha | | 68,3 | 1,7 | 2,5 | 15 | 0 | | | | | | | 15 | | |
| Other | | | | | 7 | 0 | | | | | | | 7 | | |
| | | | | | | | 1x 28, 4x 36, 1x 64, 1x 999 | | | | | | | | |
| Sample B | | 85,7 | 1,9 | 2,2 | 104 | | CVP | 85,7 | 0,46 | 7% | 79,7 | 91,7 | 104 | 103 | 99 |
| (12) Beckman Coulter | | 85,2 | 2 | 2,3 | 58 | 0 | | | | | | | 58 | | |
| (88) Becton Dickinson | | 86,7 | 2 | 2,4 | 16 | 0 | | | | | | | 16 | | |
| (177) Mindray | | 85,5 | 0,74 | 0,87 | 8 | 0 | | | | | | | 8 | | |
| (190) Exbio Praha | | 86,6 | 1,8 | 2 | 15 | 0 | | | | | | | 15 | | |
| Other | | | | | 7 | 0 | | | | | | | 7 | | |
| | | | | | | | 1x 28, 4x 36, 1x 64, 1x 999 | | | | | | | | |
| (254) CD 4+ T lymphocytes | | [%] | | | 104 | | | | | | | 104 | 92 | 88 | |
| Sample A | | 44,8 | 1,5 | 3,4 | 104 | | CVP | 44,8 | 0,37 | 10% | 40,3 | 49,3 | 104 | 98 | 94 |
| (12) Beckman Coulter | | 45 | 1,5 | 3,4 | 60 | 0 | | | | | | | 60 | | |
| (88) Becton Dickinson | | 44 | 2,5 | 5,6 | 17 | 0 | | | | | | | 17 | | |
| (177) Mindray | | 45,1 | 0,67 | 1,5 | 8 | 0 | | | | | | | 8 | | |
| (190) Exbio Praha | | 44,8 | 1,2 | 2,6 | 11 | 0 | | | | | | | 11 | | |
| Other | | | | | 8 | 0 | | | | | | | 8 | | |
| | | | | | | | 4x 36, 1x 64, 2x 166, 1x 999 | | | | | | | | |
| Sample B | | 34,7 | 1,7 | 4,8 | 104 | | CVP | 34,7 | 0,4 | 10% | 31,2 | 38,2 | 104 | 95 | 91 |
| (12) Beckman Coulter | | 34,9 | 1,5 | 4,4 | 60 | 0 | | | | | | | 60 | | |
| (88) Becton Dickinson | | 33,4 | 2,5 | 7,5 | 17 | 0 | | | | | | | 17 | | |
| (177) Mindray | | 35,7 | 2 | 5,7 | 8 | 0 | | | | | | | 8 | | |
| (190) Exbio Praha | | 34,6 | 1,2 | 3,4 | 11 | 0 | | | | | | | 11 | | |
| Other | | | | | 8 | 0 | | | | | | | 8 | | |
| | | | | | | | 4x 36, 1x 64, 2x 166, 1x 999 | | | | | | | | |
| (255) CD 8+ T lymphocytes | | [%] | | | 104 | | | | | | | 104 | 101 | 97 | |
| Sample A | | 20,4 | 1,1 | 5,2 | 104 | | CVP | 20,4 | 0,25 | 17% | 16,9 | 23,9 | 104 | 102 | 98 |
| (12) Beckman Coulter | | 20,2 | 1,1 | 5,4 | 60 | 0 | | | | | | | 60 | | |
| (88) Becton Dickinson | | 20,4 | 0,67 | 3,3 | 15 | 0 | | | | | | | 15 | | |
| (177) Mindray | | 20,4 | 0,87 | 4,3 | 8 | 0 | | | | | | | 8 | | |
| (190) Exbio Praha | | 20,3 | 1 | 5,1 | 12 | 0 | | | | | | | 12 | | |
| Other | | | | | 9 | 0 | | | | | | | 9 | | |
| | | | | | | | 1x 28, 4x 36, 1x 64, 2x 166, 1x 999 | | | | | | | | |
| Sample B | | 46,8 | 2,4 | 5,1 | 104 | | CVP | 46,8 | 0,58 | 17% | 38,8 | 54,8 | 104 | 102 | 98 |
| (12) Beckman Coulter | | 46,1 | 2,6 | 5,7 | 60 | 0 | | | | | | | 60 | | |
| (88) Becton Dickinson | | 48,3 | 1,6 | 3,4 | 15 | 0 | | | | | | | 15 | | |
| (177) Mindray | | 46,6 | 1,9 | 4,2 | 8 | 0 | | | | | | | 8 | | |
| (190) Exbio Praha | | 47,2 | 2 | 4,3 | 12 | 0 | | | | | | | 12 | | |
| Other | | | | | 9 | 0 | | | | | | | 9 | | |
| | | | | | | | 1x 28, 4x 36, 1x 64, 2x 166, 1x 999 | | | | | | | | |
| (256) B lymphocytes | | [%] | | | 104 | | | | | | | 104 | 96 | 92 | |
| Sample A | | 16,2 | 1,1 | 7 | 104 | | CVP | 16,2 | 0,27 | 30% | 11,3 | 21,1 | 104 | 104 | 100 |
| (12) Beckman Coulter | | 16,2 | 1,1 | 6,8 | 61 | 0 | | | | | | | 61 | | |
| (36) Immunotech | | 16,4 | 1,3 | 7,7 | 6 | 0 | | | | | | | 6 | | |
| (88) Becton Dickinson | | 16,9 | 1,3 | 7,7 | 15 | 0 | | | | | | | 15 | | |
| (177) Mindray | | 16,3 | 1,5 | 9,5 | 8 | 0 | | | | | | | 8 | | |
| (190) Exbio Praha | | 15,9 | 1,1 | 6,8 | 12 | 0 | | | | | | | 12 | | |
| Other | | | | | 2 | 0 | | | | | | | 2 | | |
| | | | | | | | 1x 64, 1x 999 | | | | | | | | |
| Sample B | | 2,71 | 0,56 | 21 | 104 | | CVP | 2,71 | 0,14 | 42% | 1,57 | 3,85 | 104 | 96 | 92 |
| (12) Beckman Coulter | | 2,66 | 0,55 | 21 | 61 | 0 | | | | | | | 61 | | |
| (36) Immunotech | | 2,45 | 0,96 | 39 | 6 | 0 | | | | | | | 6 | | |
| (88) Becton Dickinson | | 2,97 | 0,58 | 20 | 15 | 0 | | | | | | | 15 | | |
| (177) Mindray | | 2,86 | 0,23 | 8 | 8 | 0 | | | | | | | 8 | | |
| (190) Exbio Praha | | 2,75 | 0,43 | 16 | 12 | 0 | | | | | | | 12 | | |
| Other | | | | | 2 | 0 | | | | | | | 2 | | |
| | | | | | | | 1x 64, 1x 999 | | | | | | | | |

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

| 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 | | | | |
| (257) NK cells | [%] | | | | 104 | | | | | | | 104 | 88 | 85 | |
| Sample A | | 13,9 | 1,6 | 12 | 104 | | CVP | 13,9 | 0,39 | 26% | 10,2 | 17,6 | 104 | 98 | 94 |
| (12) Beckman Coulter | | 14 | 1,5 | 11 | 59 | 0 | | | | | | | 59 | | |
| (88) Becton Dickinson | | 13,9 | 2,3 | 17 | 15 | 0 | | | | | | | 15 | | |
| (177) Mindray | | 13,5 | 1,1 | 8,4 | 8 | 0 | | | | | | | 8 | | |
| (190) Exbio Praha | | 13,7 | 1,8 | 13 | 16 | 0 | | | | | | | 16 | | |
| Other | | | | | 6 | 0 | | | | | | | 6 | | |
| | | | | | | | | 4x 36, 1x 64, 1x 999 | | | | | | | |
| Sample B | | 9,32 | 1,6 | 17 | 104 | | CVP | 9,32 | 0,38 | 26% | 6,89 | 11,8 | 104 | 90 | 87 |
| (12) Beckman Coulter | | 9,72 | 1,4 | 14 | 59 | 0 | | | | | | | 59 | | |
| (88) Becton Dickinson | | 8,98 | 2,2 | 24 | 15 | 0 | | | | | | | 15 | | |
| (177) Mindray | | 8,18 | 1,7 | 20 | 8 | 0 | | | | | | | 8 | | |
| (190) Exbio Praha | | 8,85 | 1,4 | 16 | 16 | 0 | | | | | | | 16 | | |
| Other | | | | | 6 | 0 | | | | | | | 6 | | |
| | | | | | | | | 4x 36, 1x 64, 1x 999 | | | | | | | |
| (630) WBC | [·10 ⁹ /L] | | | | 55 | | | | | | | 55 | 46 | 84 | |
| Sample A | | 2,06 | 0,12 | 5,6 | 55 | | CVP | 2,06 | 0,038 | 11% | 1,83 | 2,29 | 55 | 47 | 85 |
| (0) not specified | | 1,96 | 0,082 | 4,2 | 9 | 0 | | | | | | | 9 | | |
| (12) Beckman Coulter | | 2,05 | 0,074 | 3,6 | 7 | 0 | | | | | | | 7 | | |
| (63) Sysmex | | 2,09 | 0,12 | 5,8 | 27 | 0 | | | | | | | 27 | | |
| (177) Mindray | | 2,12 | 0,089 | 4,2 | 6 | 0 | | | | | | | 6 | | |
| Other | | | | | 6 | 0 | | | | | | | 6 | | |
| | | | | | | | | 3x 1, 1x 88, 1x 179, 1x 190 | | | | | | | |
| Sample B | | 2,31 | 0,13 | 5,4 | 55 | | CVP | 2,31 | 0,041 | 11% | 2,05 | 2,57 | 55 | 49 | 89 |
| (0) not specified | | 2,24 | 0,13 | 5,6 | 9 | 0 | | | | | | | 9 | | |
| (12) Beckman Coulter | | 2,25 | 0,22 | 9,9 | 7 | 0 | | | | | | | 7 | | |
| (63) Sysmex | | 2,35 | 0,098 | 4,2 | 27 | 0 | | | | | | | 27 | | |
| (177) Mindray | | 2,29 | 0,082 | 3,6 | 6 | 0 | | | | | | | 6 | | |
| Other | | | | | 6 | 0 | | | | | | | 6 | | |
| | | | | | | | | 3x 1, 1x 88, 1x 179, 1x 190 | | | | | | | |
| (631) Lymphocytes | [·10 ⁹ /L] | | | | 56 | | | | | | | 56 | 46 | 82 | |
| Sample A | | 0,755 | 0,17 | 22 | 56 | | CVP | 0,755 | 0,056 | 50% | 0,377 | 1,14 | 56 | 47 | 84 |
| (0) not specified | | 0,716 | 0,28 | 40 | 12 | 0 | | | | | | | 12 | | |
| (12) Beckman Coulter | | 0,444 | 0,36 | 81 | 7 | 1 | | | | | | | 7 | | |
| (63) Sysmex | | 0,856 | 0,074 | 8,7 | 24 | 0 | | | | | | | 24 | | |
| (177) Mindray | | 0,65 | 0,045 | 6,8 | 6 | 1 | | | | | | | 6 | | |
| Other | | | | | 7 | 0 | | | | | | | 7 | | |
| | | | | | | | | 2x 1, 1x 88, 1x 179, 2x 190, 1x 999 | | | | | | | |
| Sample B | | 0,762 | 0,17 | 23 | 56 | | CVP | 0,762 | 0,058 | 50% | 0,381 | 1,15 | 56 | 48 | 86 |
| (0) not specified | | 0,703 | 0,25 | 35 | 12 | 0 | | | | | | | 12 | | |
| (12) Beckman Coulter | | 0,495 | 0,38 | 76 | 7 | 1 | | | | | | | 7 | | |
| (63) Sysmex | | 0,857 | 0,097 | 11 | 24 | 0 | | | | | | | 24 | | |
| (177) Mindray | | 0,665 | 0,037 | 5,6 | 6 | 1 | | | | | | | 6 | | |
| Other | | | | | 7 | 0 | | | | | | | 7 | | |
| | | | | | | | | 2x 1, 1x 88, 1x 179, 2x 190, 1x 999 | | | | | | | |
| (632) CD 3+ T lymphocytes (abs. count) | [·10 ⁹ /L] | | | | 56 | | | | | | | 56 | 44 | 79 | |
| Sample A | | 0,507 | 0,12 | 24 | 56 | | CVP | 0,507 | 0,04 | 50% | 0,253 | 0,761 | 56 | 45 | 80 |
| (0) not specified | | 0,499 | 0,19 | 39 | 19 | 1 | | | | | | | 19 | | |
| (12) Beckman Coulter | | 0,497 | 0,13 | 27 | 19 | 0 | | | | | | | 19 | | |
| Other | | | | | 18 | 1 | | | | | | | 18 | | |
| | | | | | | | | 4x 63, 4x 88, 3x 177, 3x 190, 4x 999 | | | | | | | |
| Sample B | | 0,649 | 0,15 | 23 | 56 | | CVP | 0,649 | 0,049 | 50% | 0,324 | 0,974 | 56 | 46 | 82 |
| (0) not specified | | 0,627 | 0,25 | 40 | 19 | 1 | | | | | | | 19 | | |
| (12) Beckman Coulter | | 0,645 | 0,18 | 28 | 19 | 0 | | | | | | | 19 | | |
| Other | | | | | 18 | 1 | | | | | | | 18 | | |
| | | | | | | | | 4x 63, 4x 88, 3x 177, 3x 190, 4x 999 | | | | | | | |
| (633) CD 4+ T lymphocytes (abs. count) | [·10 ⁹ /L] | | | | 56 | | | | | | | 56 | 44 | 79 | |
| Sample A | | 0,335 | 0,08 | 24 | 56 | | CVP | 0,335 | 0,027 | 50% | 0,167 | 0,503 | 56 | 45 | 80 |
| (0) not specified | | 0,327 | 0,12 | 37 | 19 | 1 | | | | | | | 19 | | |
| (12) Beckman Coulter | | 0,334 | 0,095 | 29 | 19 | 0 | | | | | | | 19 | | |
| Other | | | | | 18 | 1 | | | | | | | 18 | | |
| | | | | | | | | 4x 63, 4x 88, 3x 177, 3x 190, 4x 999 | | | | | | | |
| Sample B | | 0,265 | 0,067 | 25 | 56 | | CVP | 0,265 | 0,022 | 50% | 0,132 | 0,398 | 56 | 46 | 82 |
| (0) not specified | | 0,252 | 0,1 | 40 | 19 | 1 | | | | | | | 19 | | |
| (12) Beckman Coulter | | 0,269 | 0,083 | 31 | 19 | 0 | | | | | | | 19 | | |
| Other | | | | | 18 | 1 | | | | | | | 18 | | |
| | | | | | | | | 4x 63, 4x 88, 3x 177, 3x 190, 4x 999 | | | | | | | |

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

| 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 | | | | |
| (634) CD 8+ T lymphocytes (abs. count) | | [·10 ⁹ /L] | | | 56 | | | | | | | 56 | 44 | 79 | |
| Sample A | | 0,15 | 0,035 | 23 | 56 | | CVP | 0,15 | 0,012 | 50% | 0,075 | 0,225 | 56 | 45 | 80 |
| (0) not specified | | 0,149 | 0,058 | 39 | 19 | 1 | | | | | | | 19 | | |
| (12) Beckman Coulter | | 0,148 | 0,033 | 22 | 19 | 0 | | | | | | | 19 | | |
| Other | | | | | 18 | 1 | | | | | | | 18 | | |
| | | | | | | | 4x 63, 4x 88, 3x 177, 3x 190, 4x 999 | | | | | | | | |
| Sample B | | 0,354 | 0,083 | 23 | 56 | | CVP | 0,354 | 0,028 | 50% | 0,177 | 0,531 | 56 | 46 | 82 |
| (0) not specified | | 0,346 | 0,13 | 38 | 19 | 1 | | | | | | | 19 | | |
| (12) Beckman Coulter | | 0,35 | 0,11 | 30 | 19 | 0 | | | | | | | 19 | | |
| Other | | | | | 18 | 1 | | | | | | | 18 | | |
| | | | | | | | 4x 63, 4x 88, 3x 177, 3x 190, 4x 999 | | | | | | | | |
| (635) B lymphocytes (abs. count) | | [·10 ⁹ /L] | | | 56 | | | | | | | 56 | 46 | 82 | |
| Sample A | | 0,12 | 0,03 | 25 | 56 | | CVP | 0,12 | 0,01 | 50% | 0,06 | 0,18 | 56 | 46 | 82 |
| (0) not specified | | 0,117 | 0,047 | 40 | 19 | 1 | | | | | | | 19 | | |
| (12) Beckman Coulter | | 0,119 | 0,033 | 27 | 19 | 0 | | | | | | | 19 | | |
| Other | | | | | 18 | 1 | | | | | | | 18 | | |
| | | | | | | | 4x 63, 4x 88, 3x 177, 3x 190, 4x 999 | | | | | | | | |
| Sample B | | 0,02 | 0,009 | 43 | 56 | | CVP | 0,02 | 0,003 | 80% | 0,004 | 0,036 | 56 | 50 | 89 |
| (0) not specified | | 0,021 | 0,012 | 55 | 19 | 0 | | | | | | | 19 | | |
| (12) Beckman Coulter | | 0,019 | 0,008 | 43 | 19 | 0 | | | | | | | 19 | | |
| Other | | | | | 18 | 1 | | | | | | | 18 | | |
| | | | | | | | 4x 63, 4x 88, 3x 177, 3x 190, 4x 999 | | | | | | | | |
| (636) NK cells (abs. count) | | [·10 ⁹ /L] | | | 56 | | | | | | | 56 | 46 | 82 | |
| Sample A | | 0,1 | 0,033 | 33 | 56 | | CVP | 0,1 | 0,011 | 60% | 0,04 | 0,16 | 56 | 47 | 84 |
| (0) not specified | | 0,103 | 0,049 | 48 | 19 | 1 | | | | | | | 19 | | |
| (12) Beckman Coulter | | 0,093 | 0,029 | 31 | 18 | 0 | | | | | | | 18 | | |
| Other | | | | | 19 | 1 | | | | | | | 19 | | |
| | | | | | | | 1x 9, 4x 63, 4x 88, 3x 177, 3x 190, 4x 999 | | | | | | | | |
| Sample B | | 0,069 | 0,023 | 33 | 56 | | CVP | 0,069 | 0,008 | 60% | 0,027 | 0,111 | 56 | 46 | 82 |
| (0) not specified | | 0,071 | 0,037 | 52 | 19 | 1 | | | | | | | 19 | | |
| (12) Beckman Coulter | | 0,072 | 0,027 | 38 | 18 | 0 | | | | | | | 18 | | |
| Other | | | | | 19 | 1 | | | | | | | 19 | | |
| | | | | | | | 1x 9, 4x 63, 4x 88, 3x 177, 3x 190, 4x 999 | | | | | | | | |