LABQUALITY

External Quality Assessment Scheme

Vitamin A, E and D metabolites
Round 1, 2023

Specimens
Please find enclosed 2 serum samples, à 1mL.

Caution
Quality control specimens derived from human blood must be handled with the same care as patient samples, i.e. as potential transmitters of serious diseases. The specimens are found to be HBsAg, HCVAb and HIVAgAb negative when tested with licensed reagents, but no known test method can offer complete assurance that the specimens will not transmit these or other infectious diseases.

Examinations
Vitamin 25(OH)D (total)
Vitamin 1,25(OH)2D
Vitamin A
Vitamin E

Storage and use
The vials should be protected from light. They can be stored in a refrigerator if they are analysed during three days after arrival. Otherwise freeze them.

Before analysing allow samples to come to room temperature. Gently invert the sample to assure homogeneity of the contents. Avoid foaming. Analyse as patient sample.

Result reporting
Please enter the results and methods via LabScala.
Please mark down into the comment section on the E-form if Vitamin 25(OH)D (total) metabolites are expressed as D2 or D3 forms instead of total vitamin D metabolites.

Please enter the results and methods via LabScala. If you can't find your instrument or reagent from the registry, please contact the EQA Coordinator.

S001:

S002:

2023-04-24

INSTRUCTIONS

Product no. 2480, 2481
LQ751523011-012/FI

Subcontracting: Sample preparation, Sample pretesting

If the kit is incomplete or contains damaged specimens, please report immediately to info@labquality.fi.

The results should be reported no later than **May 18, 2023**.

Inquiries
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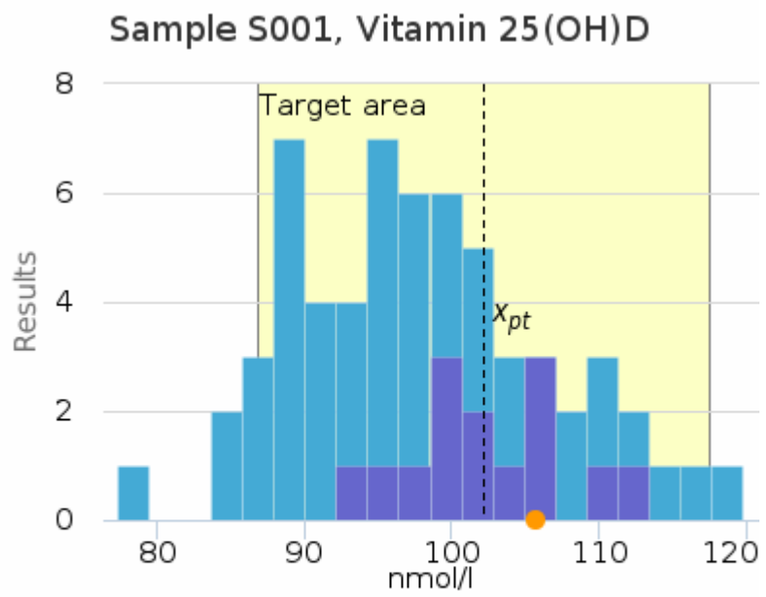
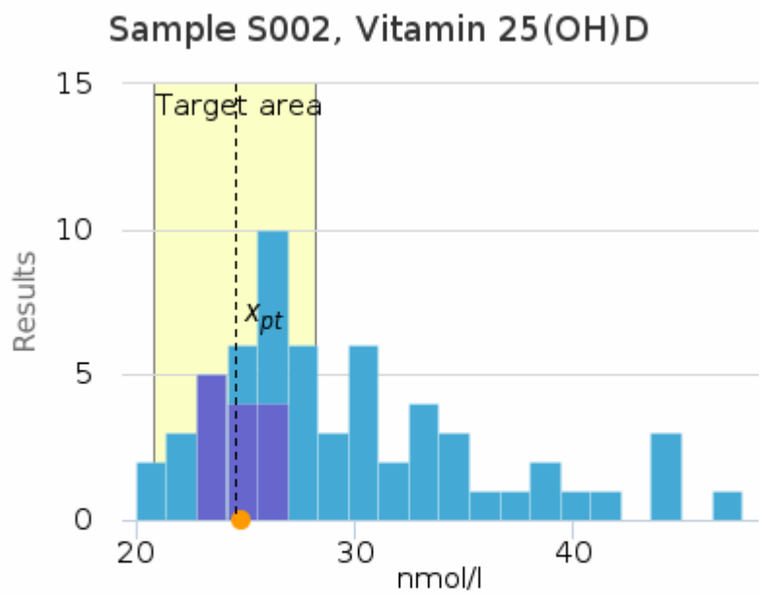
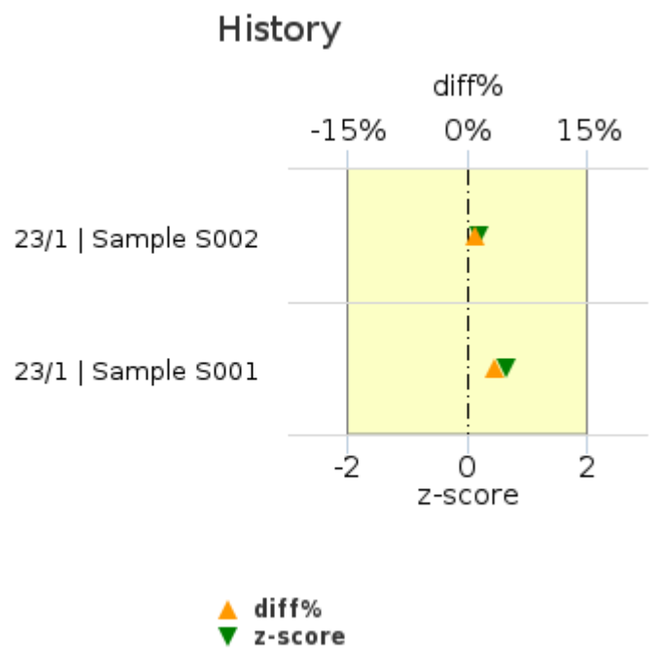
Vitamin 25(OH)D |Alinity i







	x_{pt}	sd	SEM	CV%	n
Abbott 25-OH Vitamin D	102 nmol/l	5	1	5.2	14
All methods	98 nmol/l	9	1	9.0	61

	x_{pt}	sd	SEM	CV%	n
Abbott 25-OH Vitamin D	25 nmol/l	1	<1	5.7	13
All methods	29 nmol/l	6	<1	20.5	60

Round	Sample	x_{pt}	Result	diff%	z-score
23/1	Sample S002	25	25	1%	0.18
23/1	Sample S001	102	106	3%	0.66

Report info

Participants

66 participants from 10 countries.

Report info

Your own result should be compared to others using the same method.
Assigned values (x_{pt}, target values) are means of the results where results deviating more than +/- 3*standard deviation from the median are removed. The standard uncertainty (u) of the assigned value is reported as standard error of the mean (SEM). Additionally, if the measurement uncertainty of the target value is large an automatic text is printed on the report: “The uncertainty of the assigned value is not negligible, and evaluations could be affected.”
In case the client’s result is the only one in the method group, no assigned value will be calculated, no target area shown, and no statistics calculated. In case there are only a few results in the client’s own method group, the result can be compared to all method mean or to a group that is similar to the own method.
Results reported with < or > -signs cannot be included in the statistics.

For information on report interpretation and performance evaluation, please see the " EQAS Interpretation guidelines" LabScala User instructions (top right corner ?Help link).

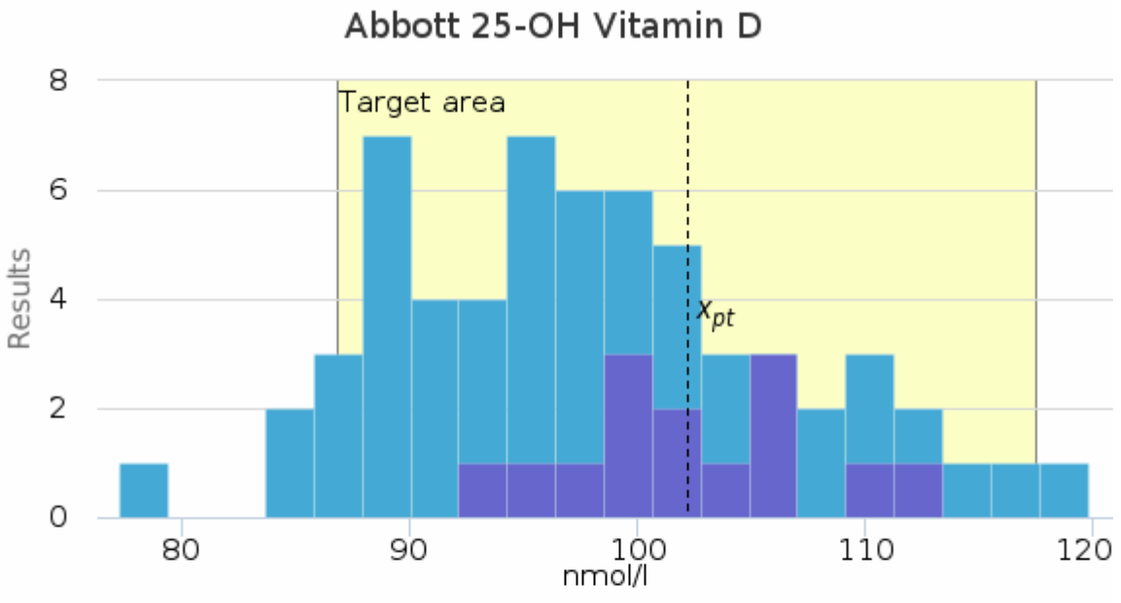
Vitamins A, E and D metabolites, April, 1-2023

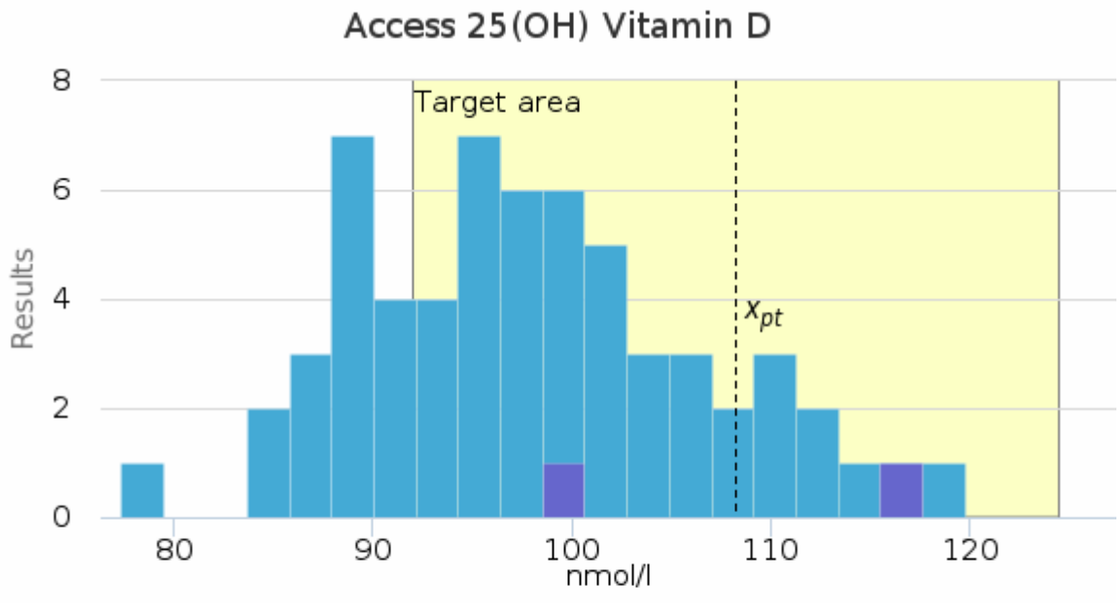
Quantitative report

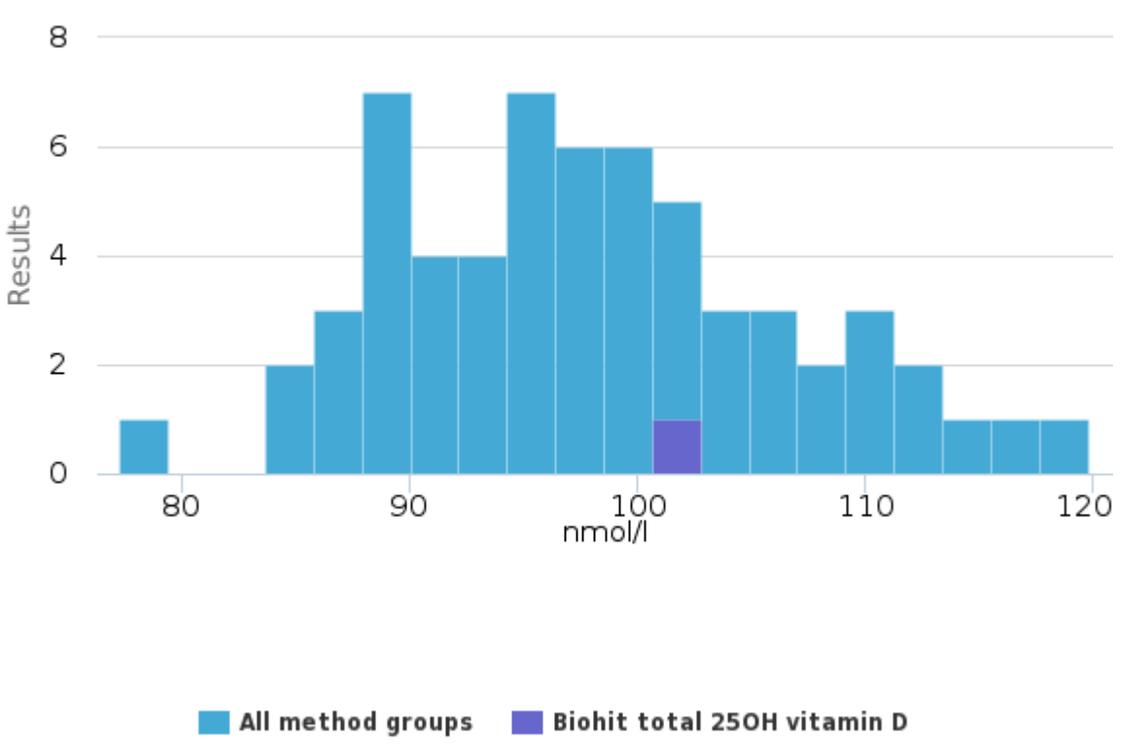
Sample S001 | Vitamin 25(OH)D, nmol/l

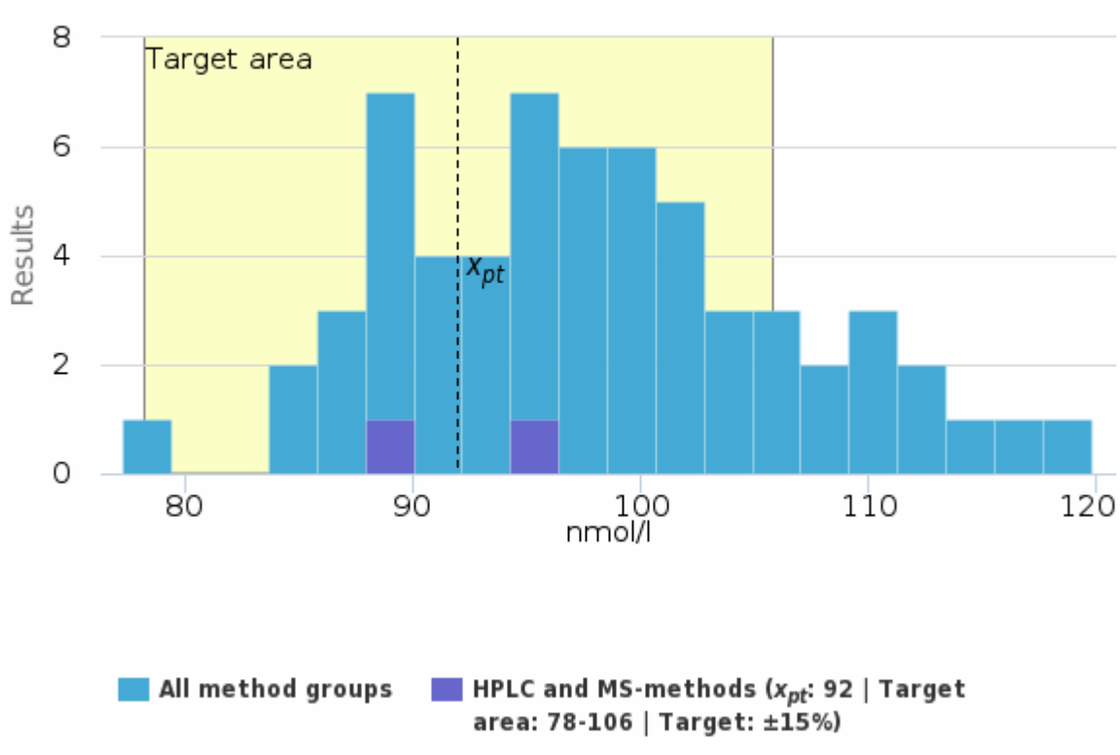
Methodics	x_{pt}	Median	sd	CV%	SEM	min	max	Outliers	n
Abbott 25-OH Vitamin D	102	102	5	5.2	1	94	112	-	14
Access 25(OH) Vitamin D	108	108	12	11.0	8	100	117	-	2
Biohit total 25OH vitamin D	-	-	-	-	-	102	102	-	1
HPLC and MS-methods	92	92	4	4.6	3	89	95	-	2
Liaison 25-OH Vitamin D TOTAL Assay	101	100	8	7.6	4	93	109	-	3
Roche Vitamin D Total	97	96	9	9.3	2	84	120	-	35
Siemens Advia Centaur VitD assay	86	89	6	6.9	3	77	90	-	4
All	**98**	**98**	**9**	**9.0**	**1**	**77**	**120**	**-**	**61**

Sample S001 | Vitamin 25(OH)D, nmol/l| histogram summaries in LabScala



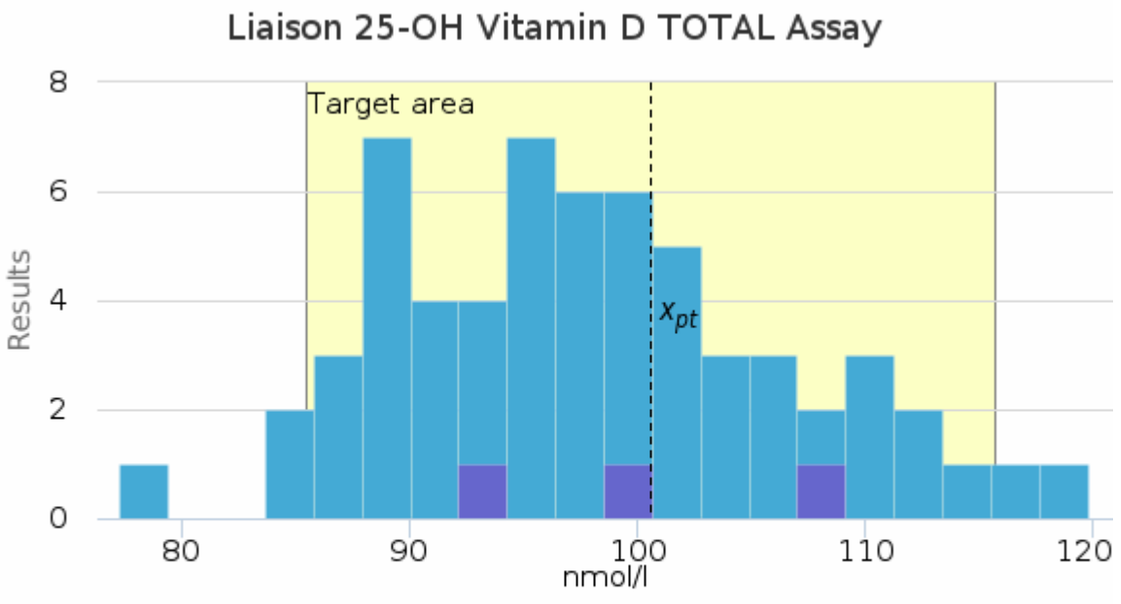


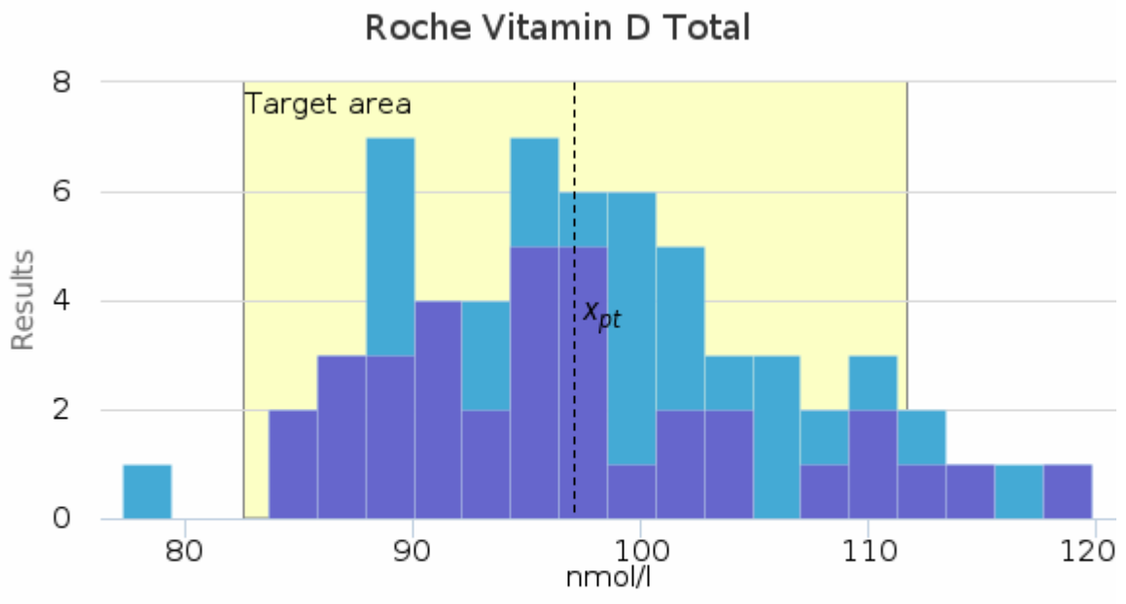


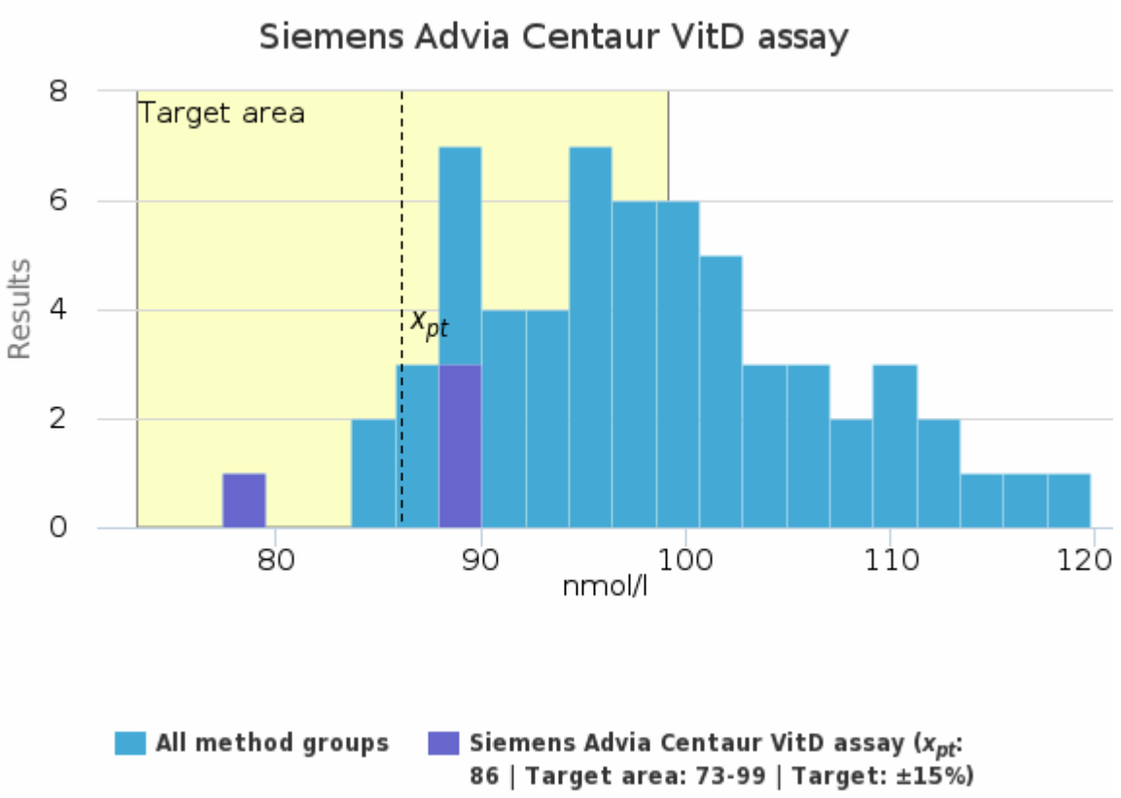


Vitamins A, E and D metabolites, April, 1-2023

Quantitative report







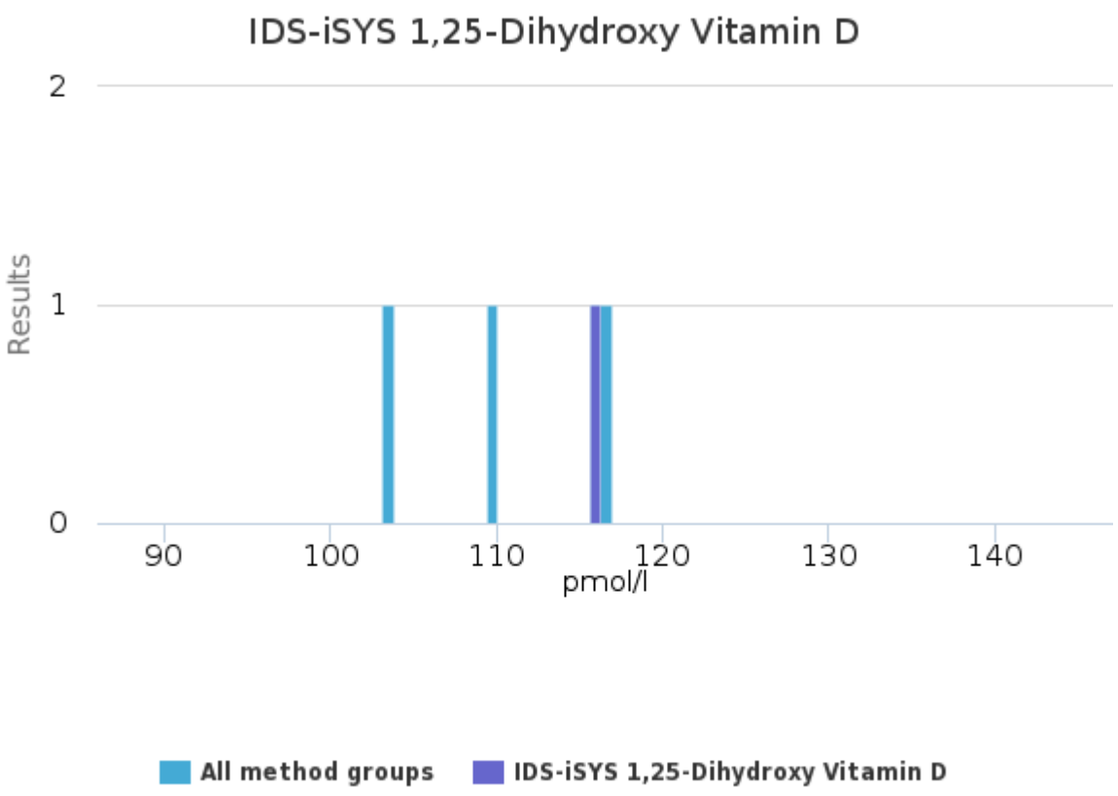
Vitamins A, E and D metabolites, April, 1-2023

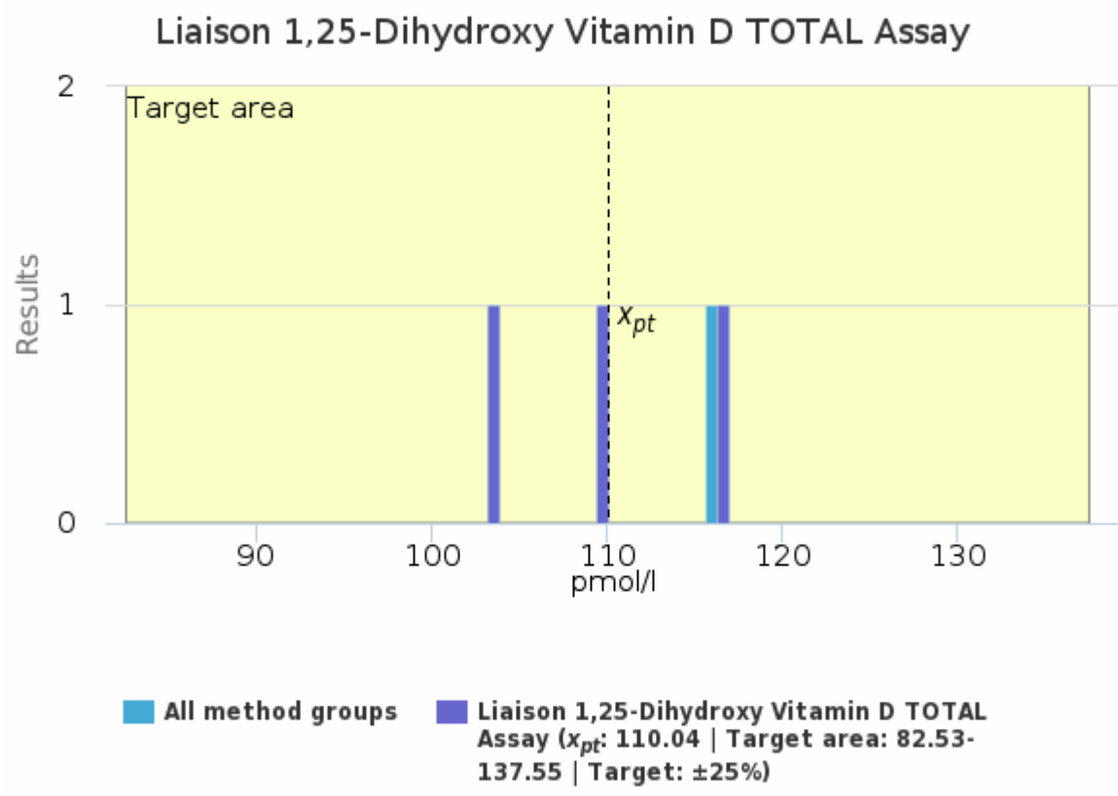
Quantitative report

Sample S001 | Vitamin 1,25(OH)2D, pmol/l

Methodics	x_{pt}	Median	sd	CV%	SEM	min	max	Outliers	n
IDS-iSYS 1,25-Dihydroxy Vitamin D	-	-	-	-	-	116.20	116.20	-	1
Liaison 1,25-Dihydroxy Vitamin D TOTAL Assay	110.04	109.92	6.90	6.3	3.98	103.20	117.00	-	3
All	**111.58**	**113.06**	**6.42**	**5.8**	**3.21**	**103.20**	**117.00**	**-**	**4**

Sample S001 | Vitamin 1,25(OH)2D, pmol/l| histogram summaries in LabScala





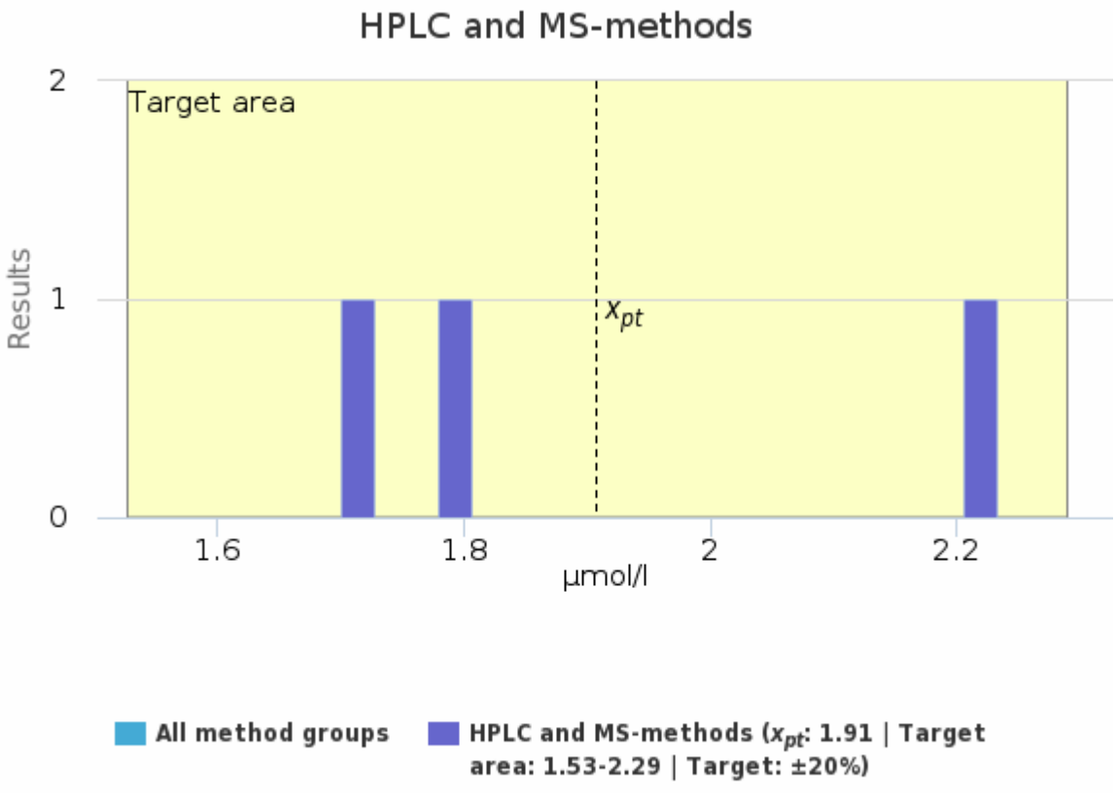
Vitamins A, E and D metabolites, April, 1-2023

Quantitative report

Sample S001 | Vitamin A, µmol/l

Methodics	x_{pt}	Median	sd	CV%	SEM	min	max	Outliers	n
HPLC and MS-methods	1.91	1.79	0.29	15.0	0.16	1.70	2.23	-	3
All	**1.91**	**1.79**	**0.29**	**15.0**	**0.16**	**1.70**	**2.23**	**-**	**3**

Sample S001 | Vitamin A, µmol/l| histogram summaries in LabScala



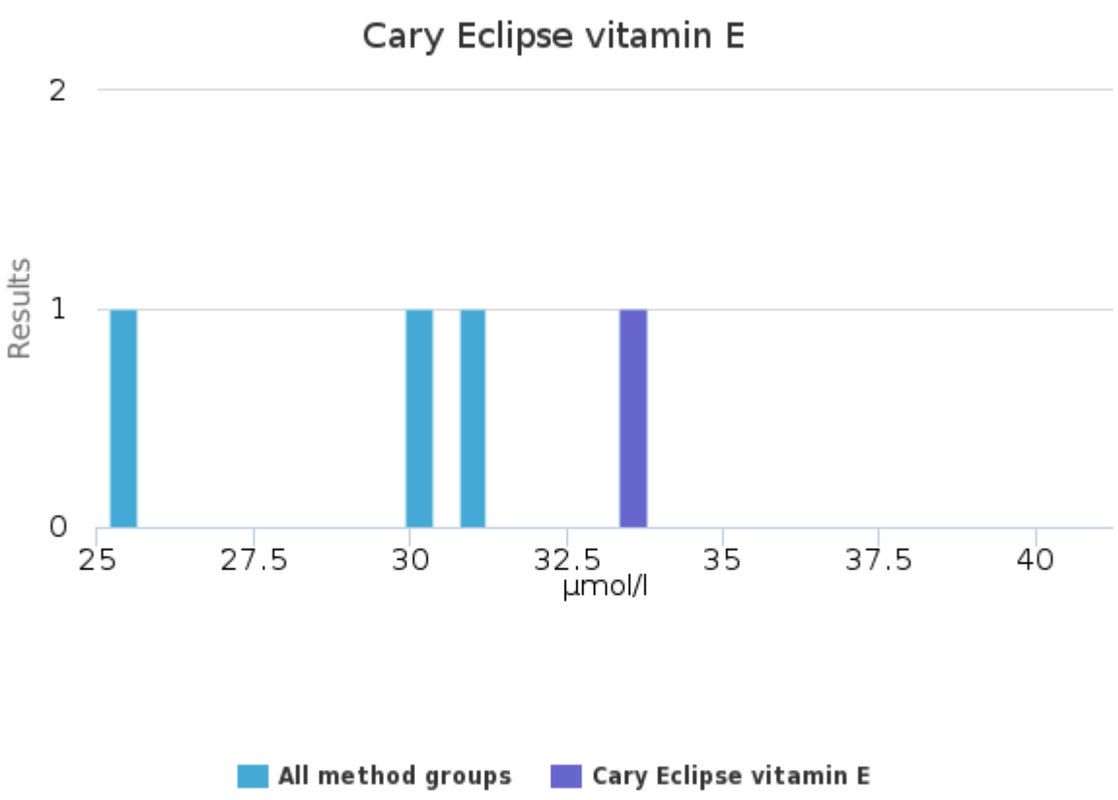
Vitamins A, E and D metabolites, April, 1-2023

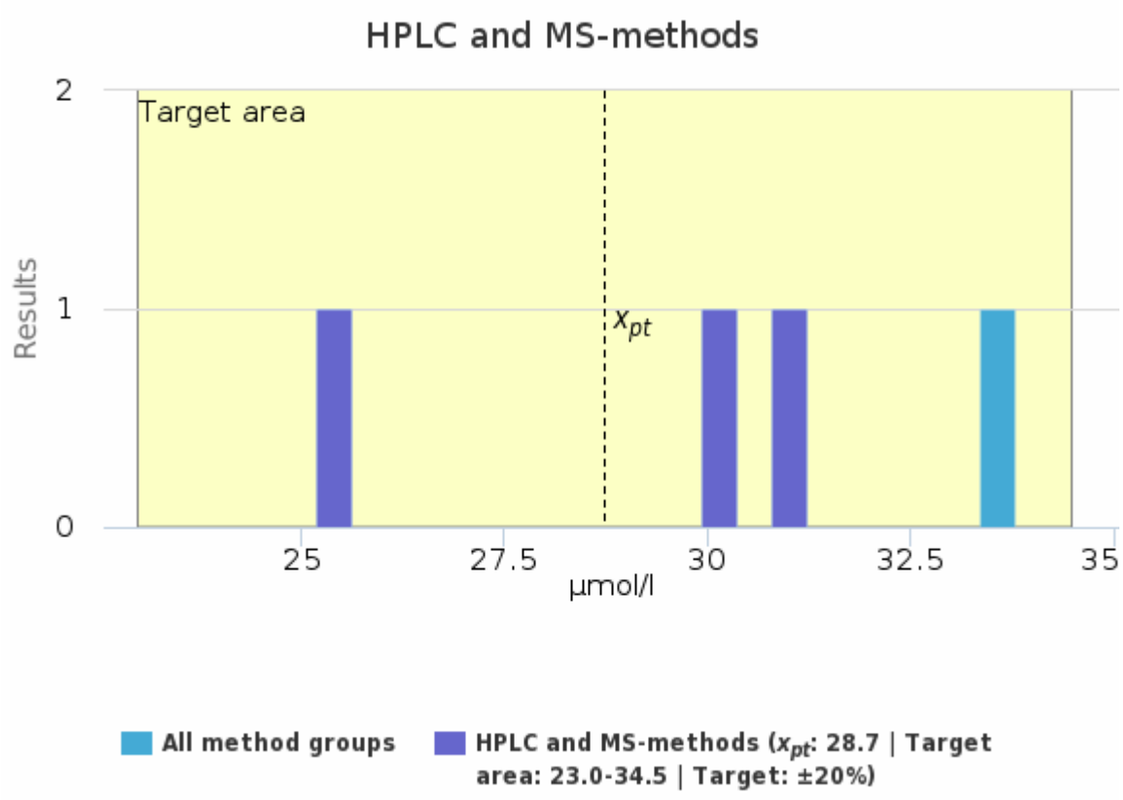
Quantitative report

Sample S001 | Vitamin E, µmol/l

Methodics	x_{pt}	Median	sd	CV%	SEM	min	max	Outliers	n
Cary Eclipse vitamin E	-	-	-	-	-	33.8	33.8	-	1
HPLC and MS-methods	28.7	30.0	3.1	10.8	1.8	25.2	31.0	-	3
All	**30.0**	**30.5**	**3.6**	**11.9**	**1.8**	**25.2**	**33.8**	**-**	**4**

Sample S001 | Vitamin E, µmol/l| histogram summaries in LabScala





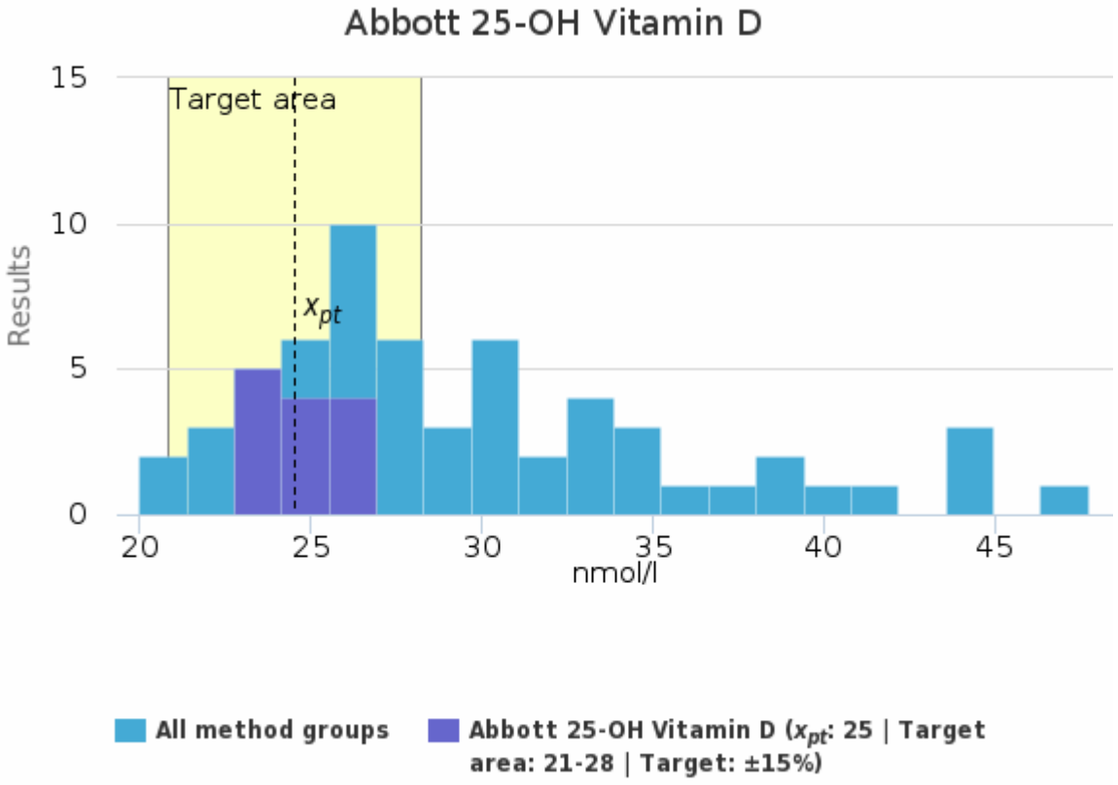
Vitamins A, E and D metabolites, April, 1-2023

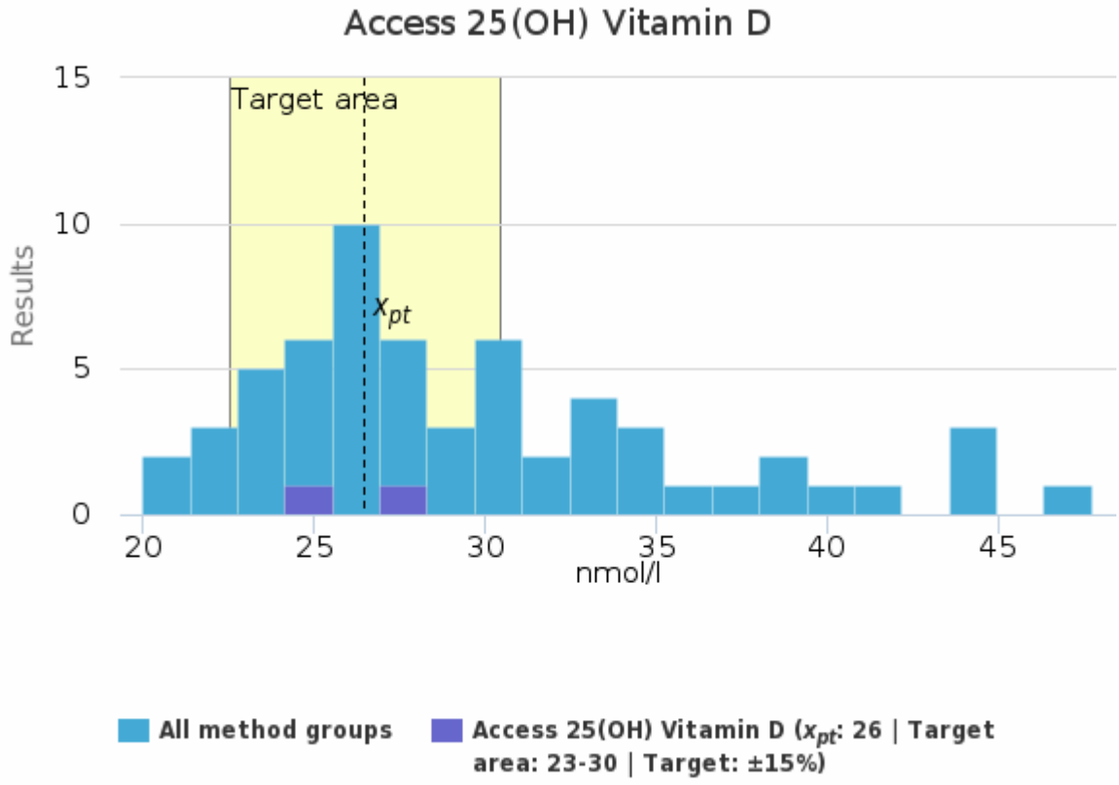
Quantitative report

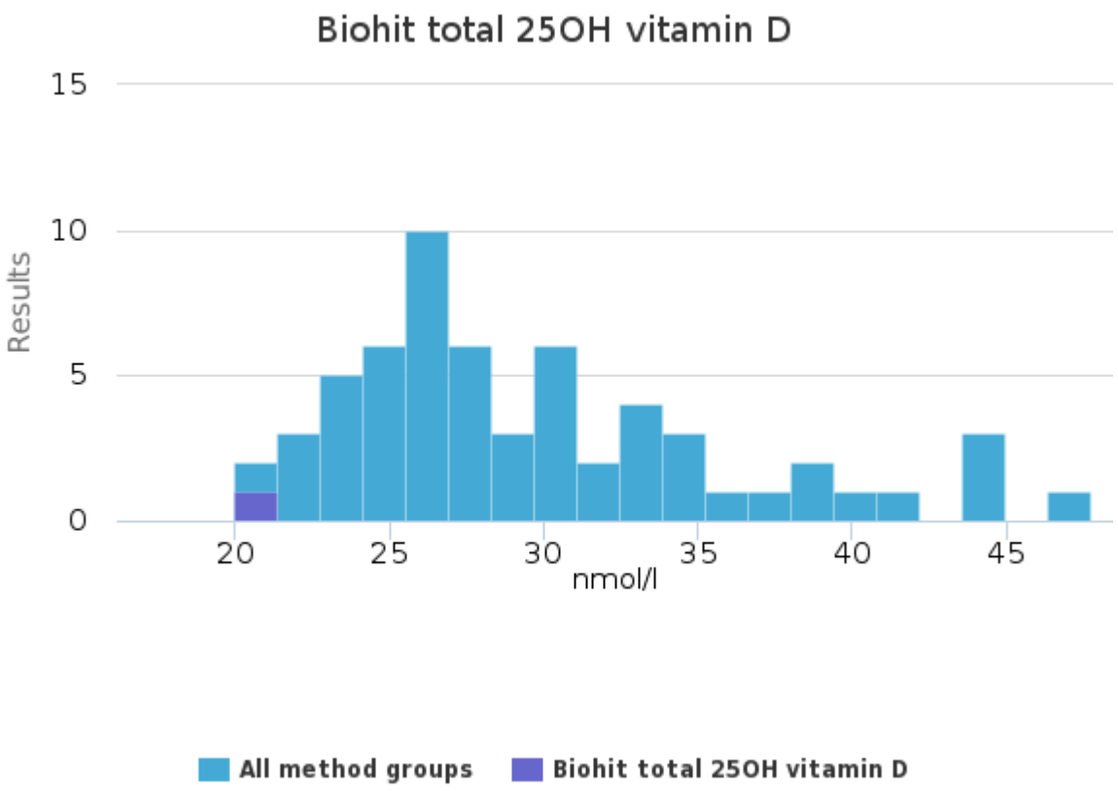
Sample S002 | Vitamin 25(OH)D, nmol/l

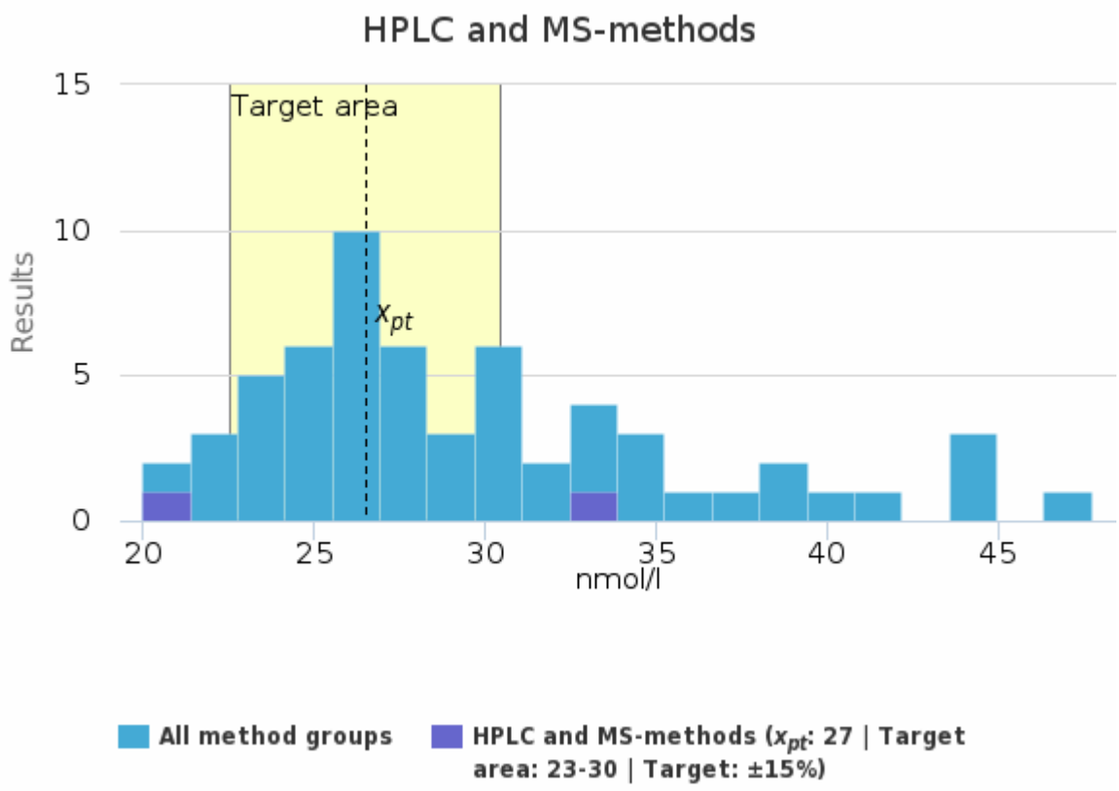
Methodics	x_{pt}	Median	sd	CV%	SEM	min	max	Outliers	n
Abbott 25-OH Vitamin D	25	24	1	5.7	<1	23	27	-	13
Access 25(OH) Vitamin D	26	26	1	5.1	<1	26	27	-	2
Biohit total 25OH vitamin D	-	-	-	-	-	21	21	-	1
HPLC and MS-methods	27	27	9	34.7	7	20	33	-	2
Liaison 25-OH Vitamin D TOTAL Assay	25	26	2	8.8	1	22	26	-	3
Roche Vitamin D Total	32	31	6	19.7	1	22	48	-	35
Siemens Advia Centaur VitD assay	32	32	5	17.0	3	26	40	-	4
All	**29**	**27**	**6**	**20.5**	**<1**	**20**	**44**	**1**	**60**

Sample S002 | Vitamin 25(OH)D, nmol/l| histogram summaries in LabScala



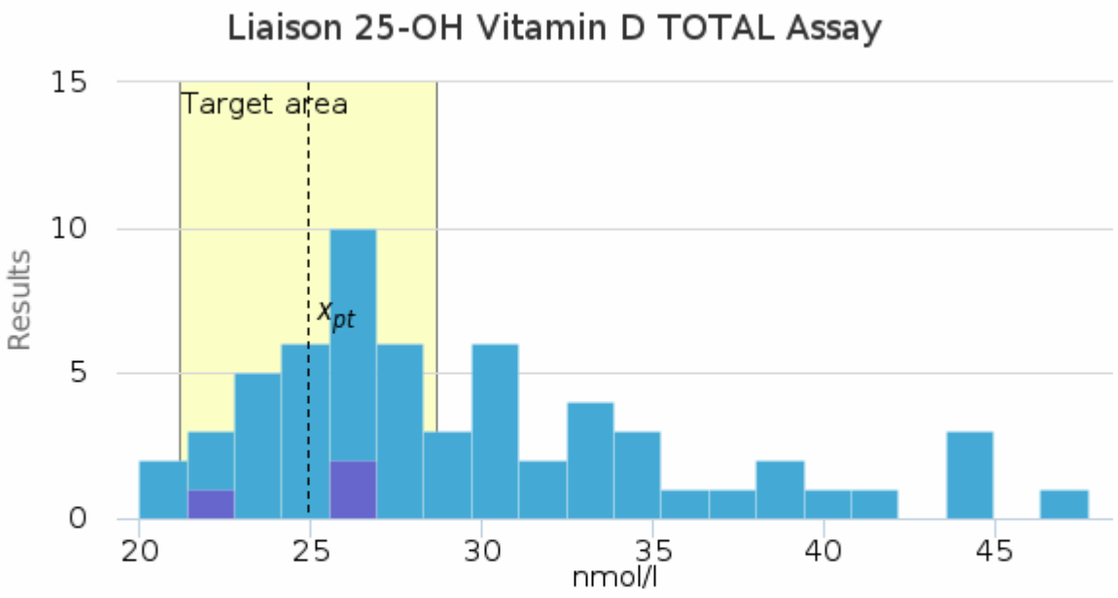


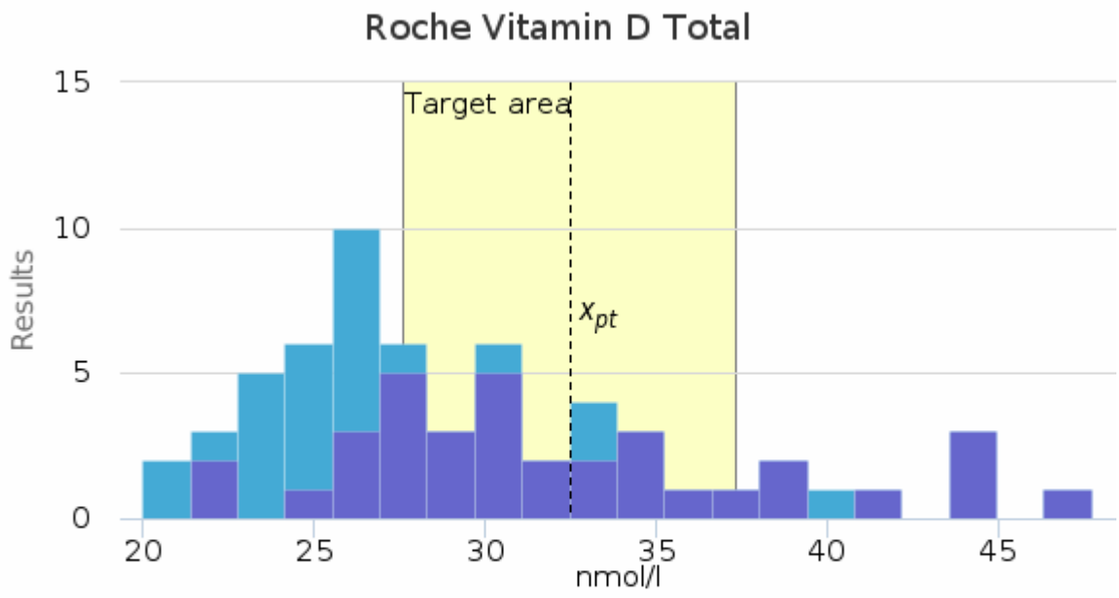


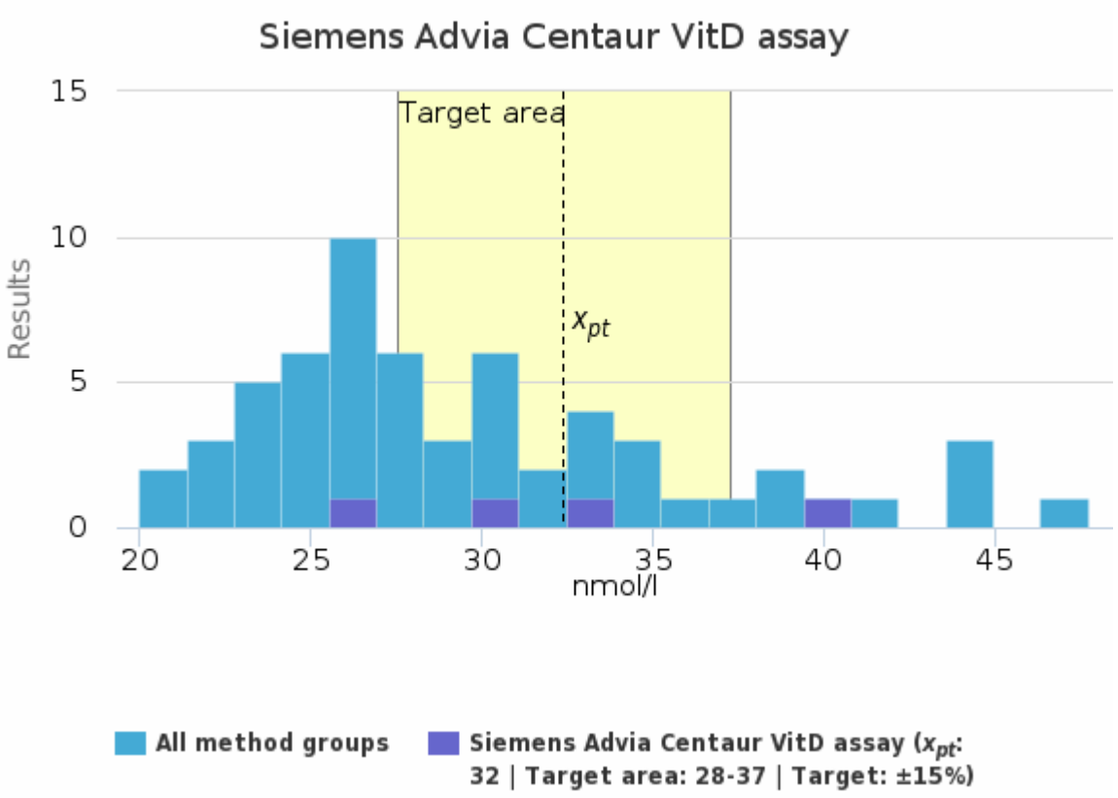


Vitamins A, E and D metabolites, April, 1-2023

Quantitative report







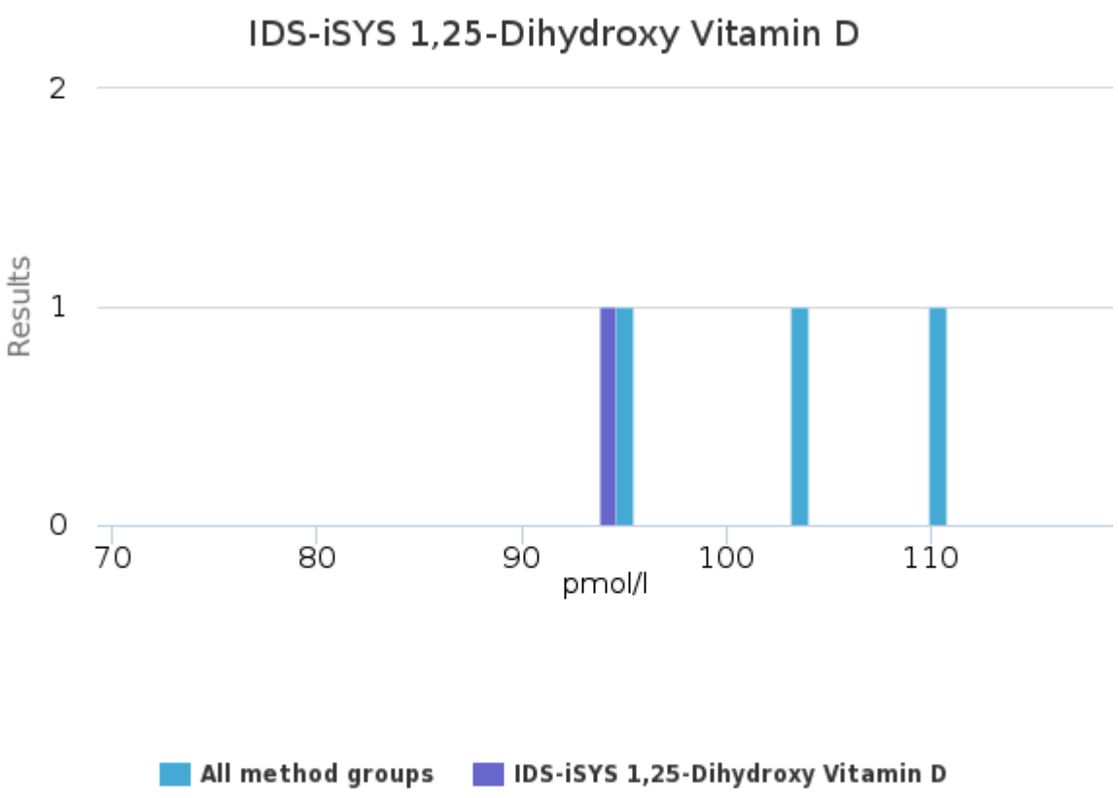
Vitamins A, E and D metabolites, April, 1-2023

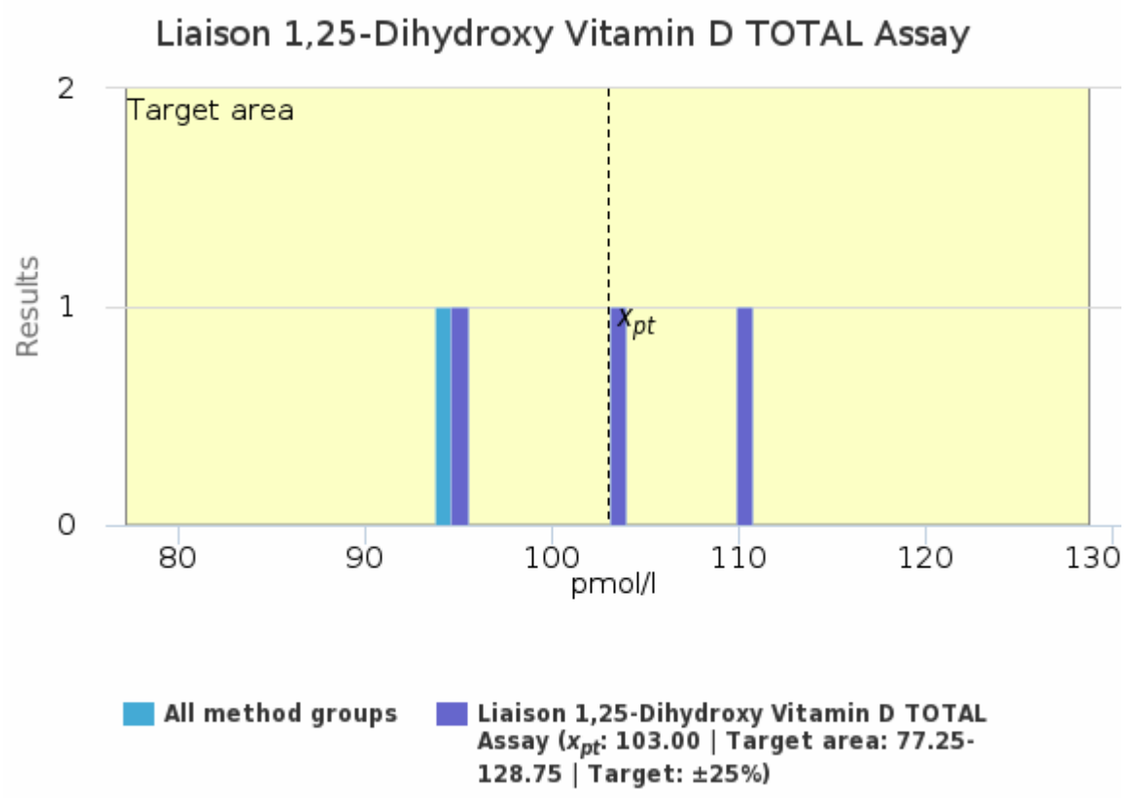
Quantitative report

Sample S002 | Vitamin 1,25(OH)2D, pmol/l

Methodics	x_{pt}	Median	sd	CV%	SEM	min	max	Outliers	n
IDS-iSYS 1,25-Dihydroxy Vitamin D	-	-	-	-	-	93.80	93.80	-	1
Liaison 1,25-Dihydroxy Vitamin D TOTAL Assay	103.00	103.44	7.99	7.8	4.61	94.80	110.76	-	3
All	**100.70**	**99.12**	**7.98**	**7.9**	**3.99**	**93.80**	**110.76**	**-**	**4**

Sample S002 | Vitamin 1,25(OH)2D, pmol/l| histogram summaries in LabScala





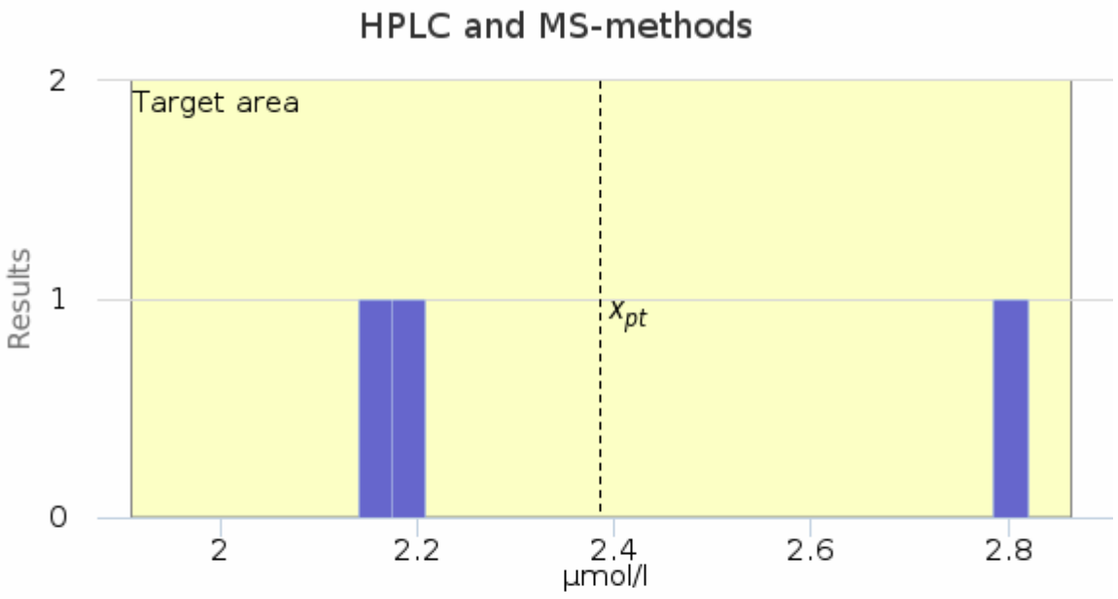
Vitamins A, E and D metabolites, April, 1-2023

Quantitative report

Sample S002 | Vitamin A, µmol/l

Methodics	x_{pt}	Median	sd	CV%	SEM	min	max	Outliers	n
HPLC and MS-methods	2.39	2.20	0.38	15.8	0.22	2.14	2.82	-	3
All	**2.39**	**2.20**	**0.38**	**15.8**	**0.22**	**2.14**	**2.82**	**-**	**3**

Sample S002 | Vitamin A, µmol/l| histogram summaries in LabScala



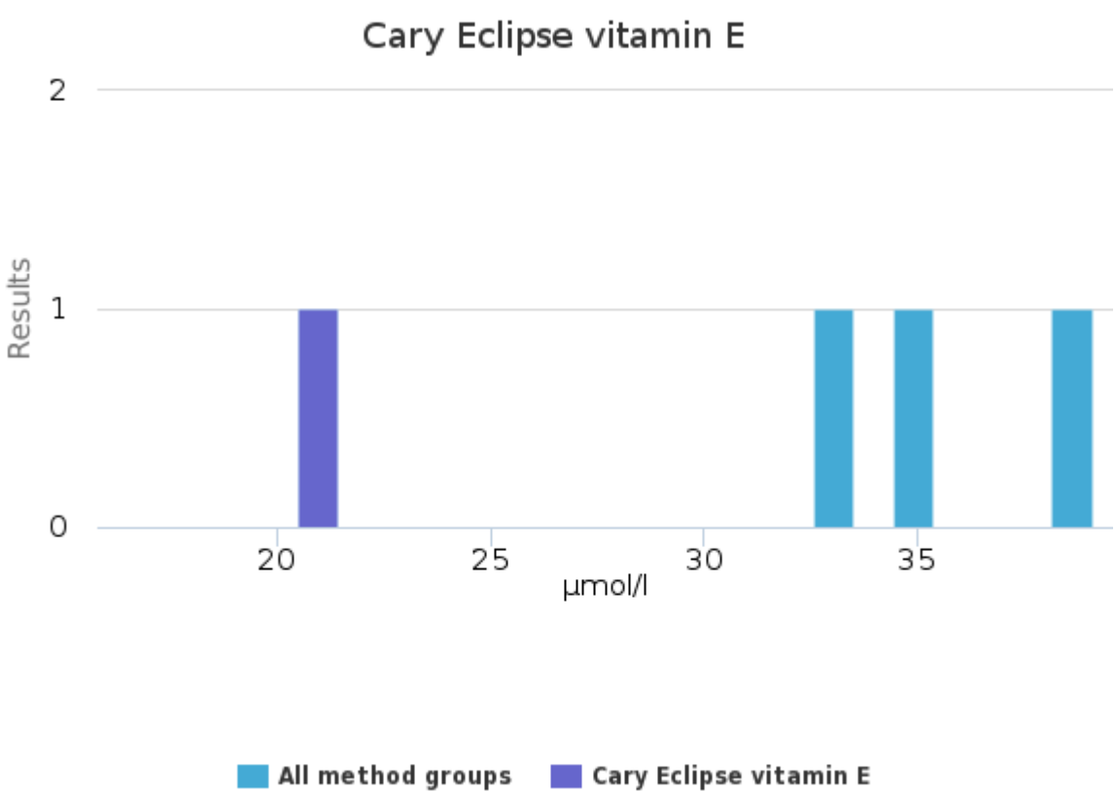
Vitamins A, E and D metabolites, April, 1-2023

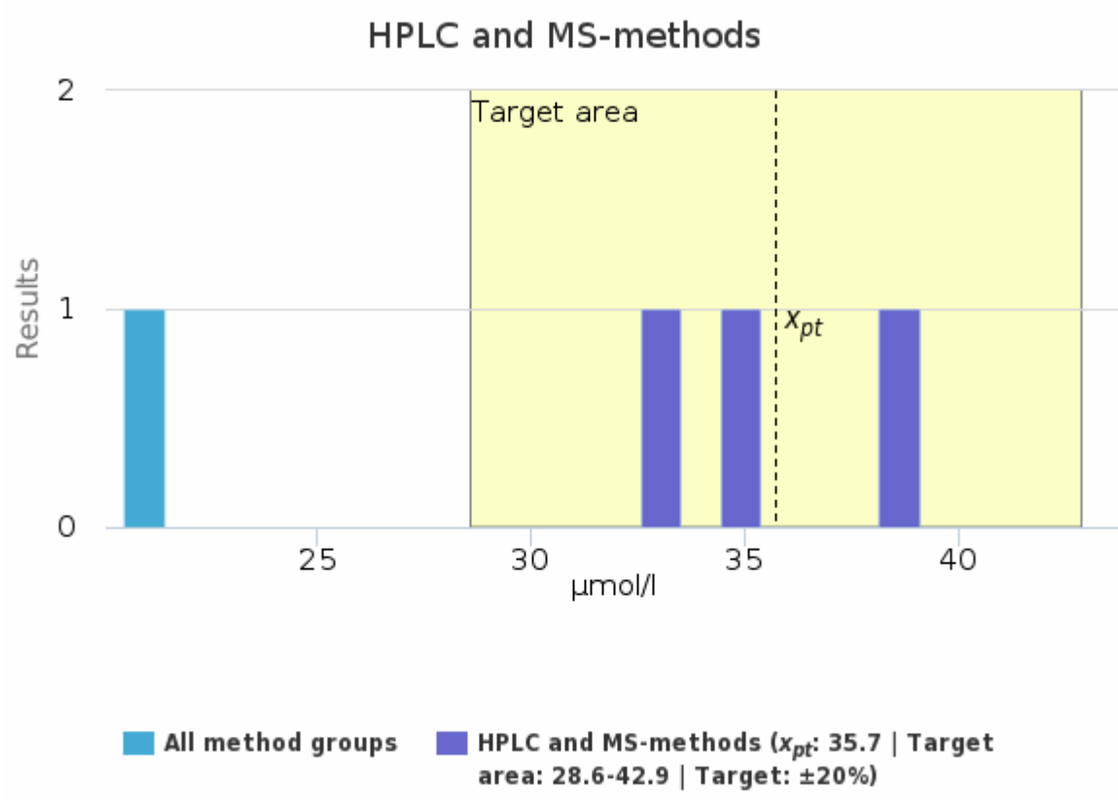
Quantitative report

Sample S002 | Vitamin E, µmol/l

Methodics	x_{pt}	Median	sd	CV%	SEM	min	max	Outliers	n
Cary Eclipse vitamin E	-	-	-	-	-	20.5	20.5	-	1
HPLC and MS-methods	35.7	34.6	3.0	8.3	1.7	33.5	39.1	-	3
All	**31.9**	**34.0**	**8.0**	**25.0**	**4.0**	**20.5**	**39.1**	**-**	**4**

Sample S002 | Vitamin E, µmol/l| histogram summaries in LabScala





Vitamins A, E and D metabolites, April, 1-2023

Quantitative report

Report info

Participants

66 participants from 10 countries.

Report info

Your own result should be compared to others using the same method.
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In case the client’s result is the only one in the method group, no assigned value will be calculated, no target area shown, and no statistics calculated. In case there are only a few results in the client’s own method group, the result can be compared to all method mean or to a group that is similar to the own method.
Results reported with < or > -signs cannot be included in the statistics.

For information on report interpretation and performance evaluation, please see the " EQAS Interpretation guidelines" LabScala User instructions (top right corner ?Help link).

LABQUALITY

External Quality Assessment Scheme

Vitamin A, E and D metabolites
Round 1, 2023

Specimens
Sample S001 (LQ751523011) and Sample S002 (LQ751523012) were authentic patient. If the specimens could be analyzed during three days, they were advised to be stored at 2…8 °C, otherwise < -18 °C.

The materials were sent without temperature control packaging.

Report info
Please see the description of the data analysis on the last page of the laboratory-specific histograms and Numerical Summary reports. It is important to read the Final report first, because it contains important information of the samples and results in each round.

Comments – Expert

Vitamins A and E
Three laboratories took part to this vitamin A round and four laboratories to vitamin E round. In Vitamin A, the round means were **S001**=1.91 µmol/L and **S002** =2.39 µmol/L. Measured, normal level, results were similar to the reported reference values **S001**=2.1 µmol/L and **S002** =3.1 µmol/L. The interlaboratory variations calculated for all participants were larger than previously (**S001**, CV%= 15% and **S002** CV%= 16%). All responders used a HPLC-method.

In Vitamin E, the round means were **S001**= 28.7 µmol/L and **S002** =35.7 µmol/L. Measured, normal to high level results, were close to the reported reference values **S001**=34 µmol/L and **S002** =43 µmol/L. The interlaboratory variations calculated for all participants were good (**S001**, CV%= 10.8% and **S002** CV%= 8.3%). In this round there was one laboratory using a fluorescence spectrometric method which output level varied compared to HPLC method.

Vitamin 25OH-D
The total number of participants in this Vitamin 25OH-D round was 61 (**S00**1) and 60 (**S002**) laboratories. From the responders, 80% was using immunological method from Roche or Abbott. For samples S001 and S002 there were refence concentrations, which were measured with LC-MS/MS method (S001: 96 nmol/L ja S002: 19 nmol/L). Concentration in sample **S001** was above Finnish recommendation for vitamin D (more than 50 nmol/L) and **S002** was under the limit for serious deficiency. There were seven different method groups.

Sample **S001** results mean was 98 nmol/L, which was close to the reference method concentration. The range of results was 70-120 nmol/L. Total interlaboratory variation in sample S001 was good. (CV%= 9%).

Sample **S002** results mean was 29 nmol/L, which was close to the reference method concentration. The range of results was 20-44 nmol/L. Total interlaboratory variation in sample S002 was elevated, likely bacause of low concentration (CV%= 20.5%).

2023-06-12

FINAL REPORT

Product no. 2480

Subcontracting: Sample preparation, sample pretesting.

Samples sent	2023-04-24
Round closed	2023-05-18
Final report	2023-06-12

Request for correction
Typing errors in laboratory's result forms are on laboratory's responsibility. Labquality accepts responsibility only for result processing. Requests must be notified by writing within three weeks from the date of this letter.

Authorized by
EQA Coordinator
Satu Eklund
satu.eklund@labquality.fi

Expert
Mikko Helenius, PhD, clinical biochemist, Vita Laboratoriot Oy, Helsinki, Finland

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Vitamin 1,25-$(OH)_2D$

In this 1,25-(OH)2D -vitamin round there were 4 participants. Responders both used immunological methods (IDS iSYS and Liaison). Result average in sample **S001** 112 pmol/L which is within the Finnish reference interval of 1,25-(OH)2D -vitamin for adults (48-190 pmol/L). Result average in sample **S002** was 101 pmol/L. Results with these two methods were quite similar, range in sample S001 was 103 – 117 pmol/L and CV%=5.8. Range in sample S002 was 94 – 111 pmol/L and CV%= 7.9%. For 1,25-(OH)2D -vitamin, there were no reference value.

Specimen	Vitamin A Retinol µmol/L *	Vitamin E Alpha-tocopherol µmol/L *	25-OH-Vitamin D (D2 + D3) nmol/L **
S001: LQ751523011	**2.1**	**34**	**96**
S002: LQ751523012	**3.1**	**43**	**19**

*) Vitamin A and E reference values are determined by HPLC-UV/VIS

**) 25-OH-Vitamin D (D2 + D3) are determined by LC-MS/MS

End of report