

External Quality Assessment Scheme

Hormones B Steroid and peptide hormones Round 1, 2020

Specimens

Please find enclosed 2 lyophilized samples, each 3 mL.

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

Aldosterone
Androstendione
C-peptide
Cortisol
DHEAS
Estradiol
FSH
Gastrin
Growth hormone
Insulin
LH
Progesterone
17-OH-progesterone
Prolactin
SHBG
IGF-1
TBG
Testosterone and testosterone, free

Storage and use

Lyophilized samples are stable at +2 ...8 °C until the closing date of the round. Add 3.0 ml aqua to the samples. Ensure solubility and homogeneity. The reconstituted sample can be stored for 10 days at +2 to +8 °C (C-peptide for 3 days). The components of the frozen sample can be stored frozen at -20 °C for 4 weeks if the sample is frozen within 30 minutes after reconstitution. Thaw the sample shortly before analysis and mix until homogenous. Allow the sample to warm to room temperature before analysis.

Result reporting

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

S001: LQ732420011



S002: LQ732420012



2020-02-10

INSTRUCTIONS

Product no. 2301, 2301S, 1301
LQ732420011-012/NO

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

The results should be reported no later than
February 27, 2020.

Inquiries

EQA Coordinator
Päivi Ranta
paivi.ranta@labquality.fi

Labquality

Kumpulantie 15
FI-00520 HELSINKI
Finland

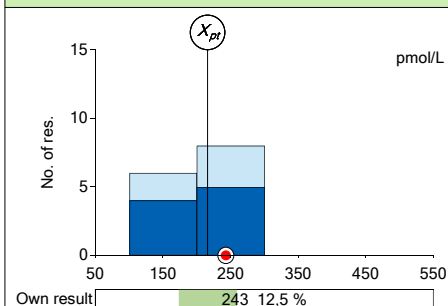
Tel. + 358 9 8566 8200
Fax + 358 9 8566 8280

info@labquality.fi
www.labquality.fi



Aldosterone
0603

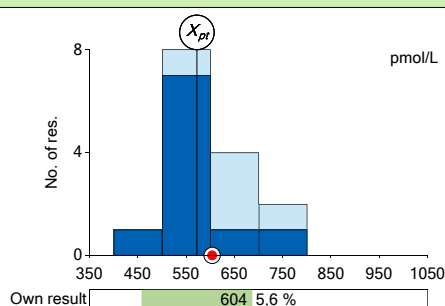
Liaison

DiaSorin Liaison
365**DiaSorin Liaison**
624

Sample B1

Assigned value (X): 216 pmol/L, X_{pt} Target limits ($X \pm 20\%$): 173 - 259 pmol/L

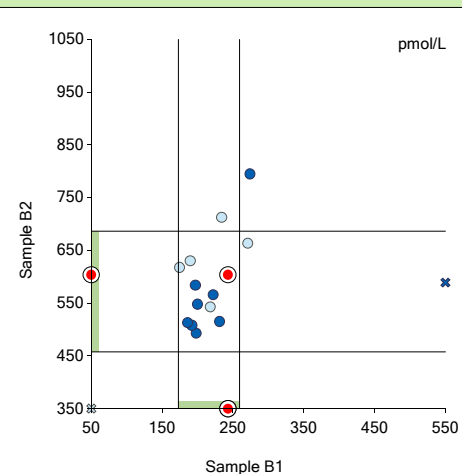
	x	s	u	CV%	n
Own group	215,9	29,1	9,7	13,5	9
All	215,3	32,7	10,9	15,2	14



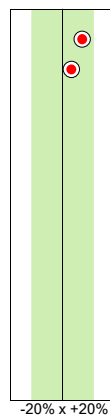
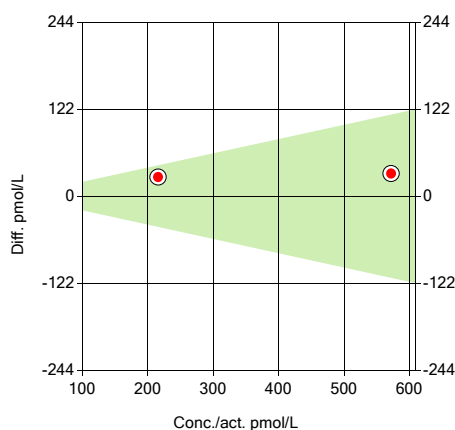
Sample B2

Assigned value (X): 572 pmol/L, X_{pt} Target limits ($X \pm 20\%$): 458 - 686 pmol/L

	x	s	u	CV%	n
Own group	571,5	87,4	27,7	15,3	10
All	585,0	76,7	24,8	13,1	15

**Previous results**

Round	Sample	X	Own	Diff%	z
20/01	HbP 365	216	243	12,5	0,9
20/01	HbQ 365	572	604	5,6	0,4

**Conc./act. dependent performance****Comments**

Sample B1, Own group:

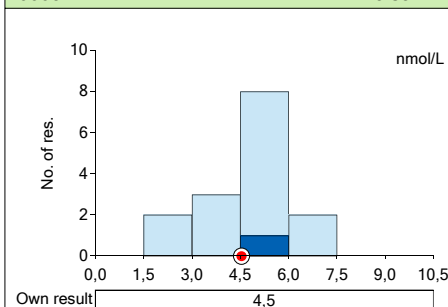
The uncertainty (u) of the assigned value is not negligible, and evaluations could be affected. Z score is uncertain due to the small number of observations.

Sample B2, Own group:

The uncertainty (u) of the assigned value is not negligible, and evaluations could be affected. Z score is uncertain due to the small number of observations.

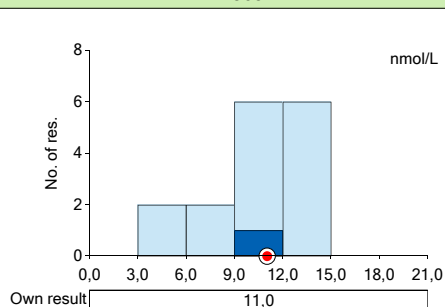
Androstenedione
0605

Liaison

DiaSorin Liaison
365**DiaSorin Liaison**
624

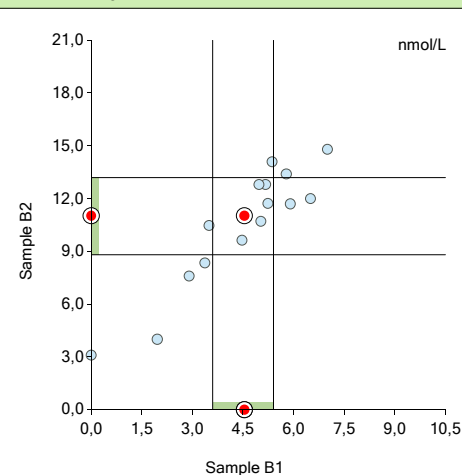
Sample B1

	x	s	u	CV%	n
Own group	-	-	-	-	1
All	4,82	1,44	0,47	30,0	15

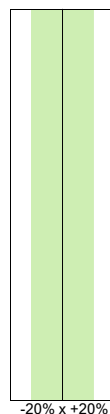
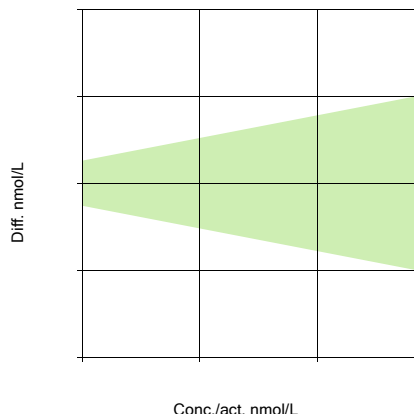


Sample B2

	x	s	u	CV%	n
Own group	-	-	-	-	1
All	11,23	2,56	0,83	22,8	15

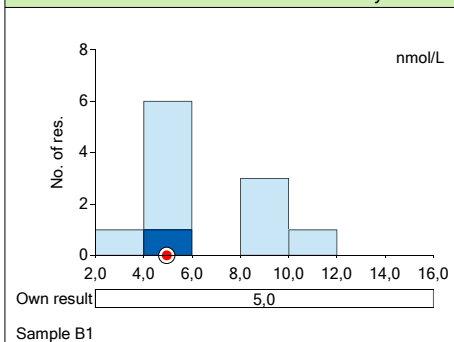
**Previous results**

Round	Sample	X	Own	Diff%	z
20/01	HbP 365	-	4,5	-	-
20/01	HbQ 365	-	11,0	-	-

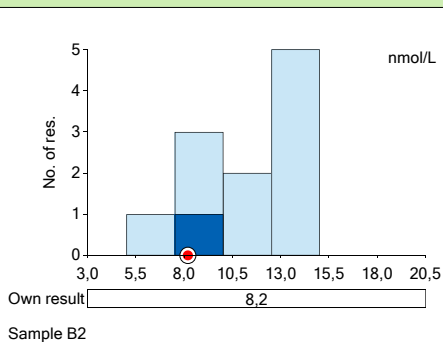
**Conc./act. dependent performance****Comments**

Prog, 17-OH
0660

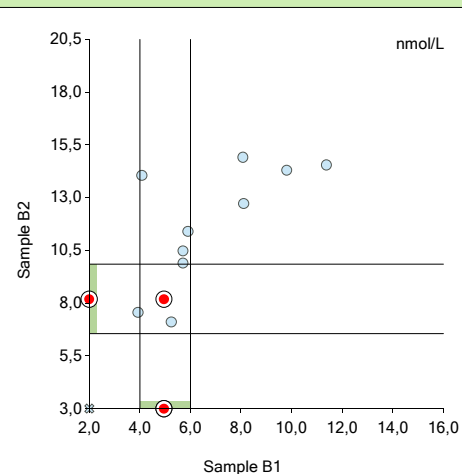
Hybrid DRG

DRG Diagnostics EIA
334DRG Diagnostics
634

	x	s	u	CV%	n
Own group	-	-	-	-	1
All	6,52	2,49	0,94	38,1	11

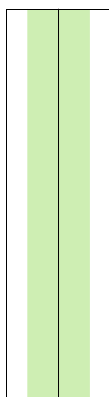


	x	s	u	CV%	n
Own group	-	-	-	-	1
All	11,38	3,32	1,25	29,2	11

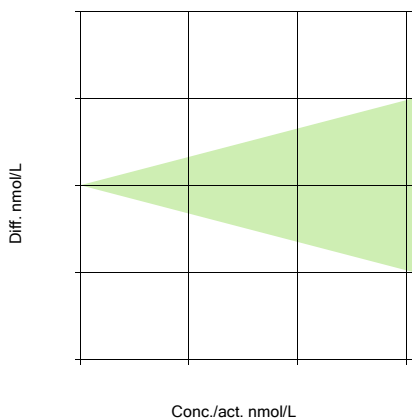


Previous results

Round	Sample	X	Own	Diff%	z
20/01	HbP 334	-	5,0	-	-
20/01	HbQ 334	-	8,2	-	-
17/06	HbU 334	-	2,0	-	-
17/06	HbR 334	-	19,6	-	-



Conc./act. dependent performance



Comments

Participants

98 participants from 17 countries.

Report info

Assigned value (target value) calculation and its uncertainty

Your own result should be compared to others using the same method.

The assigned values (X_{rob}) are calculated according to the robust procedure described in the standard ISO 13528 (Statistical methods for use in proficiency testing by interlaboratory comparisons, Annex C, Algorithm A).

The standard uncertainty of the assigned value is expressed as $1.25 \times$ the standard error of mean (SEM) and marked as "u" in numerical summary. Due to its iterative mode algorithm A adds the uncertainty of the assigned value and with this factor we want to adjust uncertainty accordingly.

In case there are 2-12 results in a method group, the robust calculation is not used but assigned values (X_{pt}) are means of the results where results deviating more than $\pm 3 \times$ 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 too large ($u > 0.1 \times$ maximum allowable error) an automatic text is printed on the report: "The uncertainty of the assigned value is not negligible, and evaluations could be affected."

Please notice also that for groups that have only 1 result only the client's own result is shown. No target value (except for reference method values) is calculated, no target areas are shown.

Z score

In case there are 2-5 results in a method group, no z-score is calculated, and a text is printed on the report: "Due to the small number of results, the z score is not calculated." In case there are 6-12 results, the report has a text: "Z score is uncertain due to the small number of observations."

Results reported with $< \text{tai} >$ -signs cannot be included in the statistics.

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

NUMERICAL SUMMARY

Hormone Determinations B 2020/01

Analyte	Method group	x	med	s	CV%	u	Min	Max	Number
Sample B1									
Aldosterone, pmol/L									
	Beckman Coulter Immunotech	270,9	271	-	-	-	-	-	1
	Demeditec Diagnostics EIA	234,0	234	-	-	-	-	-	1
	DiaSorin Liaison	215,9	200	29,1	13,5	9,7	186	274	9
	IDS-iSYS	182,2	182	10,8	5,9	7,6	175	190	2
	Mass spectrometry	218,0	218	-	-	-	-	-	1
	All	215,3	209	32,7	15,2	8,7	175	274	14
Androstenedione, nmol/L									
	Beckman Coulter Immunotech	4,75	4,7	0,39	8,3	0,28	4,5	5,0	2
	DiaSorin Liaison	4,54	4,5	-	-	-	-	-	1
	IBL ELISA	1,96	2,0	-	-	-	-	-	1
	Mass spectrometry	3,13	3,1	0,33	10,5	0,23	2,9	3,4	2
	Siemens Immulite 1000, 2000, 2500	5,49	5,4	1,00	18,2	0,33	3,5	7,0	9
	All	4,82	5,0	1,44	30,0	0,37	2,0	7,0	15
Cortisol, nmol/l									
	Abbott Alinity	272,8	278	17,2	6,3	7,7	248	292	5
	Abbott Architect	277,1	275	12,1	4,4	3,6	257	302	11
	Beckman Coulter Access & Unicel	259,5	260	6,4	2,5	4,5	255	264	2
	bioMerieux Vidas	242,2	242	-	-	-	-	-	1
	DiaSorin Liaison	203,0	203	17,9	8,8	12,7	190	216	2
	Mass spectrometry	284,0	284	-	-	-	-	-	1
	Roche cobas e, Elecsys, & Modular E	297,3	295	9,7	3,3	2,0	280	341	36
	Siemens Advia Centaur & Atellica	323,6	325	17,2	5,3	5,2	291	346	11
	Siemens Immulite 1000, 2000, 2500	295,0	295	-	-	-	-	-	1
	All	293,5	292	21,0	7,1	2,5	190	346	70
C-peptide, nmol/L									
	Abbott Alinity	1,710	1,70	0,034	2,0	0,020	1,68	1,75	3
	Abbott Architect	1,727	1,73	0,068	4,0	0,034	1,64	1,80	4
	DiaSorin Liaison	2,215	2,22	-	-	-	-	-	1
	Roche cobas e, Elecsys, & Modular E	1,951	1,95	0,066	3,4	0,016	1,75	2,11	27
	Siemens Advia Centaur & Atellica	1,362	1,35	0,098	7,2	0,033	1,22	1,61	14
	Siemens Immulite 1000, 2000, 2500	1,883	1,87	0,050	2,6	0,029	1,84	1,94	3
	Tosoh AIA	1,779	1,78	-	-	-	-	-	1
	All	1,768	1,87	0,291	16,5	0,040	1,22	2,22	53
DHEAS, µmol/L									
	Abbott Alinity	7,54	7,5	-	-	-	-	-	1
	Abbott Architect	7,06	7,1	0,23	3,2	0,11	6,7	7,2	4
	DIAsource RIA	7,91	7,9	-	-	-	-	-	1
	Roche cobas e, Elecsys, & Modular E	7,70	7,7	0,46	6,0	0,16	6,9	8,3	13
	Siemens Advia Centaur & Atellica	6,11	6,0	0,52	8,6	0,21	5,6	6,9	6
	Siemens Immulite 1000, 2000, 2500	5,93	5,8	0,48	8,1	0,20	5,3	6,6	6
	Tosoh AIA	6,60	6,6	-	-	-	-	-	1
	All	6,96	7,1	0,98	14,1	0,17	5,3	8,3	32
Estradiol, nmol/L									
	Abbott Alinity	0,362	0,36	0,019	5,2	0,009	0,34	0,39	4
	Abbott Architect	0,352	0,36	0,023	6,5	0,008	0,31	0,38	9
	Beckman Coulter Access & Unicel	0,337	0,34	-	-	-	-	-	1
	bioMerieux Vidas	0,198	0,20	-	-	-	-	-	1
	CIS-Bio CT	0,276	0,28	-	-	-	-	-	1
	Mass spectrometry	0,252	0,25	-	-	-	-	-	1

NUMERICAL SUMMARY

Hormone Determinations B 2020/01, Sample B1

Analyte	Method group	x	med	s	CV%	u	Min	Max	Number
Estradiol, nmol/L									
Roche cobas e, Elecsys, & Modular E		0,370	0,37	0,019	5,2	0,004	0,33	0,41	30
Siemens Advia Centaur & Atellica		0,338	0,34	0,033	9,7	0,010	0,29	0,39	16
Siemens Dimension & Vista		0,300	0,30	0,010	3,3	0,006	0,29	0,31	3
Siemens Immulite 1000, 2000, 2500		0,340	0,34	-	-	-	-	-	1
Tosoh AIA		0,269	0,27	-	-	-	-	-	1
All		0,352	0,36	0,032	9,0	0,004	0,20	0,41	68
FSH, U/L									
Abbott Alinity		5,18	5,2	0,04	0,8	0,02	5,1	5,2	4
Abbott Architect		5,22	5,2	0,24	4,6	0,08	4,8	12,1	14
Beckman Coulter Access & Unicel		5,93	5,9	-	-	-	-	-	1
bioMerieux Vidas		6,00	6,0	-	-	-	-	-	1
DiaSorin Liaison		8,77	8,8	-	-	-	-	-	1
Roche cobas e, Elecsys, & Modular E		5,51	5,5	0,19	3,4	0,04	5,2	6,1	32
Siemens Advia Centaur & Atellica		6,23	6,3	0,41	6,5	0,12	5,5	6,9	17
Siemens Dimension & Vista		6,44	5,3	2,84	44,1	1,27	4,8	11,5	5
Siemens Immulite 1000, 2000, 2500		5,58	5,6	0,11	2,0	0,08	5,5	5,7	2
Tosoh AIA		6,84	6,8	-	-	-	-	-	1
All		5,62	5,5	0,48	8,6	0,05	4,8	12,1	78
Gastrin, pmol/L									
Siemens Immulite 1000, 2000, 2500		62,6	62	4,9	7,9	1,6	54	73	9
Others		26,0	26	-	-	-	-	-	1
All		61,4	62	5,6	9,1	1,8	26	73	10
GH, µg/l									
Beckman Coulter Access & Unicel		3,04	3,2	0,23	7,7	0,13	2,8	3,2	3
DiaSorin Liaison		3,31	3,3	0,09	2,7	0,05	3,2	3,4	3
IDS-iSYS		3,26	3,3	0,11	3,5	0,05	3,1	3,4	5
Roche cobas e, Elecsys, & Modular E		3,77	3,7	0,14	3,7	0,06	3,6	4,0	6
Siemens Immulite 1000, 2000, 2500		3,75	3,7	0,14	3,9	0,05	3,5	4,0	9
All		3,54	3,6	0,33	9,4	0,07	2,8	4,0	26
IGF-1, nmol/L									
CIS RIA-gnost		28,30	28,3	-	-	-	-	-	1
DiaSorin Liaison		28,50	29,0	1,51	5,3	0,57	26,5	30,5	7
IDS-iSYS		21,32	21,0	1,01	4,7	0,50	20,5	22,8	4
Mediagnost ELISA		23,33	23,3	4,43	19,0	3,13	20,2	26,5	2
Siemens IGF-I Restandardized		19,00	18,9	1,51	8,0	0,53	17,0	21,6	8
All		23,26	21,3	5,13	22,1	1,09	17,0	30,5	22
Insulin, mU/L									
Abbott Alinity		17,1	17	0,1	0,4	0,0	17	17	2
Abbott Architect		18,2	18	1,1	6,1	0,5	17	20	6
DiaSorin Liaison		26,8	28	3,2	12,0	1,8	23	29	3
Mercodia		24,0	24	-	-	-	-	-	1
Roche cobas e, Elecsys, & Modular E		26,1	26	1,2	4,8	0,3	24	29	26
Siemens Advia Centaur & Atellica		23,6	24	1,5	6,5	0,5	21	26	10
Siemens Immulite 1000, 2000, 2500		10,2	10	1,5	15,1	1,1	9	11	2
All		24,2	25	3,5	14,4	0,5	9	29	50
LH, U/L									
Abbott Alinity		2,76	2,7	0,22	8,2	0,13	2,5	3,0	3
Abbott Architect		3,02	3,0	0,10	3,2	0,03	2,9	6,3	14
Beckman Coulter Access & Unicel		2,28	2,3	-	-	-	-	-	1
bioMerieux Vidas		3,20	3,2	-	-	-	-	-	1
DiaSorin Liaison		4,01	4,0	-	-	-	-	-	1

NUMERICAL SUMMARY

Hormone Determinations B 2020/01, Sample B1

Analyte	Method group	x	med	s	CV%	u	Min	Max	Number
LH, U/L									
Roche cobas e, Elecsys, & Modular E		4,94	4,9	0,14	2,8	0,03	4,6	5,2	31
Siemens Advia Centaur & Atellica		3,62	3,6	0,24	6,6	0,07	3,3	4,0	16
Siemens Dimension & Vista		4,23	3,8	1,51	35,6	0,67	3,3	6,9	5
Siemens Immulite 1000, 2000, 2500		3,78	3,8	0,74	19,7	0,53	3,3	4,3	2
Tosoh AIA		3,20	3,2	-	-	-	-	-	1
All		4,06	3,9	1,00	24,7	0,12	2,3	6,9	75
Prog, 17-OH, nmol/L									
Demeditec Diagnostics EIA		6,89	6,9	1,68	24,3	1,19	5,7	8,1	2
DiaSorin RIA		8,10	8,1	-	-	-	-	-	1
DRG Diagnostics EIA		4,95	5,0	-	-	-	-	-	1
IBL ELISA		4,81	4,8	1,25	26,0	0,89	3,9	5,7	2
IDS-iSYS		5,24	5,2	-	-	-	-	-	1
Mass spectrometry		4,99	5,0	1,29	25,8	0,91	4,1	5,9	2
Novatec EIA		11,37	11,4	-	-	-	-	-	1
Siemens Dimension & Vista		9,80	9,8	-	-	-	-	-	1
All		6,52	5,7	2,49	38,1	0,75	3,9	11,4	11
Progesterone, nmol/L									
Abbott Alinity		11,79	11,8	0,32	2,7	0,18	11,4	12,1	3
Abbott Architect		11,90	12,1	0,83	6,9	0,30	10,8	12,9	12
Beckman Coulter Access & Unicel		4,90	4,9	-	-	-	-	-	1
bioMerieux Vidas		14,31	14,3	-	-	-	-	-	1
Roche cobas e, Elecsys, & Modular E		14,99	15,1	0,57	3,8	0,14	13,9	16,2	25
Siemens Advia Centaur & Atellica		10,85	11,0	1,33	12,2	0,43	9,0	17,0	15
Siemens Dimension & Vista		13,83	14,0	0,29	2,1	0,17	13,5	14,0	3
Siemens Immulite 1000, 2000, 2500		9,76	9,8	0,76	7,8	0,54	9,2	10,3	2
All		12,98	12,8	2,37	18,2	0,30	4,9	17,0	62
Prolactin, mU/L									
Abbott Alinity		180,1	182	7,2	4,0	3,6	170	186	4
Abbott Architect		169,7	168	9,5	5,6	3,2	156	192	14
Beckman Coulter Access & Unicel		145,4	145	-	-	-	-	-	1
bioMerieux Vidas		220,5	220	-	-	-	-	-	1
Brahms Kryptor		130,5	131	0,7	0,5	0,5	130	131	2
DiaSorin Liaison		194,5	195	-	-	-	-	-	1
Roche cobas e, Elecsys, & Modular E		185,6	185	8,0	4,3	1,7	167	206	33
Siemens Advia Centaur & Atellica		139,1	139	6,6	4,7	2,3	130	152	13
Siemens Dimension & Vista		182,7	149	52,5	28,7	23,5	140	250	5
Siemens Immulite 1000, 2000, 2500		140,9	141	14,3	10,1	10,1	131	151	2
Tosoh AIA		224,9	225	-	-	-	-	-	1
All		171,6	177	25,3	14,7	2,9	130	250	77
SHBG, nmol/L									
Abbott Alinity		38,7	39	-	-	-	-	-	1
Abbott Architect		31,0	32	3,3	10,6	1,2	26	35	7
DiaSorin Liaison		38,4	38	-	-	-	-	-	1
Roche cobas e, Elecsys, & Modular E		33,6	33	2,3	6,8	0,6	31	40	22
Siemens Advia Centaur & Atellica		32,5	33	1,1	3,4	0,3	31	34	11
Siemens Immulite 1000, 2000, 2500		30,5	30	1,6	5,3	0,9	29	32	3
All		32,9	32	2,3	6,9	0,3	26	40	45
TBG, mg/L									
Siemens Immulite 1000, 2000, 2500		15,2	15	-	-	-	-	-	1
All		15,2	15	0,0	0,0	0,0	15	15	1
Testo, free, pmol/L									

NUMERICAL SUMMARY

Hormone Determinations B 2020/01, Sample B1

Analyte	Method group	x	med	s	CV%	u	Min	Max	Number
Testo, free, pmol/L									
Calculated		862,9	863	-	-	-	-	-	1
Demeditec Diagnostics EIA		63,9	64	-	-	-	-	-	1
Mass spectrometry		11,2	11	-	-	-	-	-	1
Novatec EIA		55,0	55	-	-	-	-	-	1
All		248,2	59	465,4	187,5	232,7	11	863	4
Testosterone, nmol/L									
Abbott Alinity		28,91	28,0	1,72	5,9	0,99	27,8	30,9	3
Abbott Architect		24,55	24,7	1,61	6,5	0,54	22,0	26,9	9
Beckman Coulter Access & Unicel		18,90	18,9	-	-	-	-	-	1
CIS-Bio CT		23,10	23,1	0,14	0,6	0,10	23,0	23,2	2
Mass spectrometry		23,95	22,5	3,84	16,0	1,72	20,2	30,3	5
Roche cobas e, Elecsys, & Modular E		24,06	24,2	1,04	4,3	0,27	21,4	25,5	23
Siemens Advia Centaur & Atellica		23,03	23,0	2,51	10,9	0,87	15,8	27,0	13
Tosoh AIA		27,00	27,0	-	-	-	-	-	1
All		24,00	24,0	1,83	7,6	0,24	15,8	30,9	57

Sample B2

Aldosterone, pmol/L									
Beckman Coulter Immunotech		663,6	664	-	-	-	-	-	1
Demeditec Diagnostics EIA		712,6	713	-	-	-	-	-	1
DiaSorin Liaison		571,5	557	87,4	15,3	27,7	493	795	10
IDS-iSYS		624,1	624	9,0	1,4	6,3	618	630	2
Mass spectrometry		543,0	543	-	-	-	-	-	1
All		585,0	584	76,7	13,1	19,8	493	795	15
Androstenedione, nmol/L									
Beckman Coulter Immunotech		10,17	10,2	0,77	7,5	0,54	9,6	10,7	2
DiaSorin Liaison		11,03	11,0	-	-	-	-	-	1
IBL ELISA		4,01	4,0	-	-	-	-	-	1
Mass spectrometry		7,97	8,0	0,53	6,6	0,37	7,6	8,3	2
Siemens Immulite 1000, 2000, 2500		12,64	12,8	1,34	10,6	0,45	10,5	14,8	9
All		11,23	11,7	2,56	22,8	0,66	4,0	14,8	15
Cortisol, nmol/L									
Abbott Alinity		476,4	483	22,4	4,7	10,0	450	502	5
Abbott Architect		487,2	485	24,6	5,0	7,4	443	530	11
Beckman Coulter Access & Unicel		484,0	484	15,6	3,2	11,0	473	495	2
bioMerieux Vidas		425,7	426	-	-	-	-	-	1
DiaSorin Liaison		524,3	524	35,4	6,7	25,0	499	549	2
Mass spectrometry		510,0	510	-	-	-	-	-	1
Roche cobas e, Elecsys, & Modular E		535,3	532	21,7	4,0	4,5	389	644	36
Siemens Advia Centaur & Atellica		618,9	624	45,2	7,3	16,3	532	676	12
Siemens Immulite 1000, 2000, 2500		466,0	466	-	-	-	-	-	1
All		529,7	530	49,6	9,4	5,9	389	676	71
C-peptide, nmol/L									
Abbott Alinity		0,637	0,64	0,028	4,4	0,016	0,61	0,66	3
Abbott Architect		0,565	0,64	0,168	29,7	0,084	0,31	0,67	4
DiaSorin Liaison		0,871	0,87	-	-	-	-	-	1
Roche cobas e, Elecsys, & Modular E		0,787	0,79	0,029	3,7	0,006	0,65	0,86	35
Siemens Advia Centaur & Atellica		0,548	0,55	0,061	11,1	0,020	0,47	0,66	14
Siemens Immulite 1000, 2000, 2500		0,669	0,63	0,081	12,0	0,046	0,62	0,76	3
Tosoh AIA		0,657	0,66	-	-	-	-	-	1
All		0,709	0,76	0,121	17,1	0,016	0,31	0,87	61

DHEAS, µmol/L

NUMERICAL SUMMARY

Hormone Determinations B 2020/01, Sample B2

Analyte	Method group	x	med	s	CV%	u	Min	Max	Number
DHEAS, µmol/L									
Abbott Architect		11,19	11,3	0,31	2,7	0,14	10,7	11,5	5
DIAsource RIA		12,20	12,2	-	-	-	-	-	1
Roche cobas e, Elecsys, & Modular E		12,13	12,3	0,59	4,8	0,20	10,8	12,9	13
Siemens Advia Centaur & Atellica		9,46	9,4	0,44	4,6	0,18	8,9	10,0	6
Siemens Immulite 1000, 2000, 2500		9,84	9,7	0,59	6,0	0,24	9,3	10,9	6
Tosoh AIA		10,64	10,6	-	-	-	-	-	1
All		10,99	11,0	1,40	12,7	0,25	8,9	12,9	32
Estradiol, nmol/L									
Abbott Alinity		0,621	0,62	0,048	7,7	0,024	0,56	0,67	4
Abbott Architect		0,609	0,61	0,027	4,4	0,009	0,56	0,64	8
Beckman Coulter Access & Unicel		0,656	0,66	-	-	-	-	-	1
bioMerieux Vidas		0,440	0,44	-	-	-	-	-	1
CIS-Bio CT		0,513	0,51	-	-	-	-	-	1
Mass spectrometry		0,458	0,46	-	-	-	-	-	1
Roche cobas e, Elecsys, & Modular E		0,675	0,67	0,033	5,0	0,008	0,59	0,74	30
Siemens Advia Centaur & Atellica		0,629	0,62	0,045	7,1	0,014	0,57	0,71	16
Siemens Dimension & Vista		0,598	0,58	0,081	13,5	0,040	0,53	0,71	4
Siemens Immulite 1000, 2000, 2500		0,631	0,63	-	-	-	-	-	1
Tosoh AIA		0,585	0,58	-	-	-	-	-	1
All		0,641	0,64	0,054	8,5	0,007	0,44	0,74	68
FSH, U/L									
Abbott Alinity		12,60	12,6	0,15	1,2	0,07	12,4	12,8	4
Abbott Architect		12,45	12,4	0,59	4,7	0,20	11,6	14,1	14
Beckman Coulter Access & Unicel		11,80	11,8	-	-	-	-	-	1
bioMerieux Vidas		14,70	14,7	-	-	-	-	-	1
DiaSorin Liaison		14,67	14,7	-	-	-	-	-	1
Roche cobas e, Elecsys, & Modular E		13,07	13,1	0,45	3,5	0,10	10,2	14,1	32
Siemens Advia Centaur & Atellica		15,10	15,2	0,82	5,4	0,25	12,9	16,1	17
Siemens Dimension & Vista		11,78	12,0	0,45	3,8	0,20	11,0	12,1	5
Siemens Immulite 1000, 2000, 2500		12,65	12,7	0,49	3,9	0,35	12,3	13,0	2
Tosoh AIA		13,98	14,0	-	-	-	-	-	1
All		13,24	13,0	1,18	8,9	0,13	10,2	16,1	78
Gastrin, pmol/L									
Siemens Immulite 1000, 2000, 2500		175,2	174	23,4	13,4	7,8	145	214	9
Others		68,0	68	-	-	-	-	-	1
All		170,0	168	31,2	18,3	9,9	68	214	10
GH, µg/l									
Beckman Coulter Access & Unicel		7,46	7,5	0,05	0,7	0,03	7,4	7,5	3
DiaSorin Liaison		7,96	8,1	0,22	2,7	0,12	7,7	8,1	3
IDS-iSYS		7,81	7,7	0,22	2,9	0,10	7,6	8,1	5
Roche cobas e, Elecsys, & Modular E		8,66	8,6	0,26	3,1	0,11	8,4	9,1	6
Siemens Immulite 1000, 2000, 2500		8,71	8,8	0,36	4,2	0,12	8,2	9,2	9
All		8,29	8,3	0,63	7,6	0,12	7,4	9,2	26
IGF-1, nmol/L									
CIS RIA-gnost		37,99	38,0	-	-	-	-	-	1
DiaSorin Liaison		38,95	38,8	2,49	6,4	0,94	35,5	42,9	7
IDS-iSYS		27,54	27,6	1,64	6,0	0,82	25,5	29,5	4
Mediagnost ELISA		30,31	30,3	7,16	23,6	5,06	25,2	35,4	2
Siemens IGF-I Restandardized		30,17	30,5	1,77	5,9	0,63	26,5	31,8	8
All		32,79	31,6	5,87	17,9	1,25	25,2	42,9	22
Insulin, mU/L									

NUMERICAL SUMMARY

Hormone Determinations B 2020/01, Sample B2

Analyte	Method group	x	med	s	CV%	u	Min	Max	Number
Insulin, mU/L									
Abbott Alinity		51,7	52	0,3	0,5	0,2	52	52	2
Abbott Architect		54,6	55	2,5	4,6	1,0	51	57	6
DiaSorin Liaison		81,5	83	3,9	4,8	2,3	77	84	3
Mercodia		69,0	69	-	-	-	-	-	1
Roche cobas e, Elecsys, & Modular E		75,8	75	3,4	4,4	0,8	56	86	25
Siemens Advia Centaur & Atellica		67,7	68	3,6	5,4	1,2	61	74	10
Siemens Immulite 1000, 2000, 2500		24,7	25	2,5	10,3	1,8	23	27	2
All		69,7	73	10,8	15,5	1,5	23	86	49
LH, U/L									
Abbott Alinity		5,57	5,6	0,35	6,3	0,20	5,2	5,9	3
Abbott Architect		6,13	6,1	0,20	3,3	0,07	5,9	6,9	14
Beckman Coulter Access & Unicel		6,90	6,9	-	-	-	-	-	1
bioMerieux Vidas		6,60	6,6	-	-	-	-	-	1
DiaSorin Liaison		9,92	9,9	-	-	-	-	-	1
Roche cobas e, Elecsys, & Modular E		9,29	9,3	0,24	2,6	0,05	6,8	9,7	31
Siemens Advia Centaur & Atellica		6,82	6,8	0,21	3,1	0,07	6,4	7,8	16
Siemens Dimension & Vista		7,89	8,0	0,72	9,1	0,32	6,8	8,5	5
Siemens Immulite 1000, 2000, 2500		9,30	9,3	0,99	10,6	0,70	8,6	10,0	2
Tosoh AIA		7,09	7,1	-	-	-	-	-	1
All		7,83	7,6	1,63	20,8	0,19	5,2	10,0	75
Prog, 17-OH, nmol/L									
Demeditec Diagnostics EIA		12,70	12,7	3,13	24,7	2,22	10,5	14,9	2
DiaSorin RIA		12,72	12,7	-	-	-	-	-	1
DRG Diagnostics EIA		8,19	8,2	-	-	-	-	-	1
IBL ELISA		8,73	8,7	1,65	18,9	1,17	7,6	9,9	2
IDS-iSYS		7,11	7,1	-	-	-	-	-	1
Mass spectrometry		12,73	12,7	1,88	14,7	1,33	11,4	14,1	2
Novatec EIA		14,55	14,6	-	-	-	-	-	1
Siemens Dimension & Vista		14,30	14,3	-	-	-	-	-	1
All		11,38	11,4	3,32	29,2	1,00	7,1	14,9	11
Progesterone, nmol/L									
Abbott Alinity		20,26	20,4	1,12	5,5	0,65	19,1	21,3	3
Abbott Architect		19,61	19,9	1,36	7,0	0,49	17,2	21,6	12
Beckman Coulter Access & Unicel		25,20	25,2	-	-	-	-	-	1
bioMerieux Vidas		25,44	25,4	-	-	-	-	-	1
Roche cobas e, Elecsys, & Modular E		25,35	25,4	1,28	5,1	0,32	19,9	27,5	25
Siemens Advia Centaur & Atellica		16,31	16,5	1,59	9,8	0,51	14,0	19,2	15
Siemens Dimension & Vista		21,97	22,0	1,05	4,8	0,61	20,9	23,0	3
Siemens Immulite 1000, 2000, 2500		15,86	15,9	2,18	13,8	1,54	14,3	17,4	2
All		21,30	21,0	4,57	21,5	0,58	14,0	27,5	62
Prolactin, mU/L									
Abbott Alinity		304,5	307	22,3	7,3	11,1	280	324	4
Abbott Architect		283,1	279	20,1	7,1	6,7	257	321	14
Beckman Coulter Access & Unicel		237,6	238	-	-	-	-	-	1
bioMerieux Vidas		311,6	312	-	-	-	-	-	1
Brahms Kryptor		229,5	230	0,7	0,3	0,5	229	230	2
DiaSorin Liaison		310,2	310	-	-	-	-	-	1
Roche cobas e, Elecsys, & Modular E		300,4	301	13,4	4,5	2,9	227	332	33
Siemens Advia Centaur & Atellica		220,5	218	13,2	6,0	4,6	206	248	13
Siemens Dimension & Vista		242,3	250	15,7	6,5	7,0	216	255	5
Siemens Immulite 1000, 2000, 2500		234,1	234	25,3	10,8	17,9	216	252	2
Tosoh AIA		358,5	359	-	-	-	-	-	1

NUMERICAL SUMMARY

Hormone Determinations B 2020/01, Sample B2

Analyte	Method group	x	med	s	CV%	u	Min	Max	Number
Prolactin, mU/L									
All		276,5	286	40,8	14,7	4,6	206	359	77
SHBG, nmol/L									
Abbott Architect		32,5	33	1,7	5,3	0,6	30	35	7
DiaSorin Liaison		38,5	39	-	-	-	-	-	1
Roche cobas e, Elecsys, & Modular E		33,8	33	2,8	8,4	0,8	30	40	22
Siemens Advia Centaur & Atellica		31,8	32	2,4	7,6	0,7	27	35	11
Siemens Immulite 1000, 2000, 2500		32,8	32	2,1	6,3	1,2	31	35	3
All		33,0	33	2,4	7,3	0,4	27	40	44
TBG, mg/L									
Siemens Immulite 1000, 2000, 2500		13,3	13	-	-	-	-	-	1
All		13,3	13	0,0	0,0	0,0	13	13	1
Testo, free, pmol/L									
Calculated		453,4	453	-	-	-	-	-	1
Demeditec Diagnostics EIA		26,4	26	-	-	-	-	-	1
Mass spectrometry		8,1	8	-	-	-	-	-	1
Novatec EIA		34,4	34	-	-	-	-	-	1
All		130,6	30	244,4	187,2	122,2	8	453	4
Testosterone, nmol/L									
Abbott Alinity		18,18	17,8	0,77	4,2	0,44	17,7	19,1	3
Abbott Architect		16,32	16,0	1,47	9,0	0,49	14,2	18,7	9
Beckman Coulter Access & Unicel		12,80	12,8	-	-	-	-	-	1
CIS-Bio CT		15,85	15,9	1,06	6,7	0,75	15,1	16,6	2
Mass spectrometry		15,19	15,2	0,91	6,0	0,41	13,9	16,5	5
Roche cobas e, Elecsys, & Modular E		16,29	16,4	0,63	3,9	0,17	14,5	17,2	23
Siemens Advia Centaur & Atellica		15,41	15,5	0,93	6,0	0,32	13,0	16,5	13
Tosoh AIA		18,16	18,2	-	-	-	-	-	1
All		16,03	16,0	1,13	7,0	0,15	12,8	19,1	57

NUMERICAL SUMMARY

Hormone Determinations B 2020/01, Sample B2

Analyte	Method group	x	med	s	CV%	u	Min	Max	Number
Testosterone, nmol/L									

Participants

98 participants from 17 countries.

Report info

Assigned value (target value) calculation and its uncertainty

Your own result should be compared to others using the same method.

The assigned values (X_{rob}) are calculated according to the robust procedure described in the standard ISO 13528 (Statistical methods for use in proficiency testing by interlaboratory comparisons, Annex C, Algorithm A).

The standard uncertainty of the assigned value is expressed as 1.25 x the standard error of mean (SEM) and marked as “u” in numerical summary. Due to its iterative mode algorithm A adds the uncertainty of the assigned value and with this factor we want to adjust uncertainty accordingly.

In case there are 2-12 results in a method group, the robust calculation is not used but assigned values (X_p) 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 too large ($u > 0.1 \cdot \text{maximum allowable error}$) an automatic text is printed on the report: “The uncertainty of the assigned value is not negligible, and evaluations could be affected.”

Please notice also that for groups that have only 1 result only the client’s own result is shown. No target value (except for reference method values) is calculated, no target areas are shown.

Z score

In case there are 2-5 results in a method group, no z-score is calculated, and a text is printed on the report: “Due to the small number of results, the z score is not calculated.” In case there are 6-12 results, the report has a text: “Z score is uncertain due to the small number of observations.”

Results reported with $< \text{tai} >$ -signs cannot be included in the statistics.

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

External Quality Assessment Scheme

Hormones B Steroid and peptide hormones Round 1, 2020

Specimens

Sample S001 (LQ732420011) and sample S002 (LQ732420012) were lyophilized human serum samples.

Based on the previous tests and the results of this round, the samples are homogeneous, stable and suitable for the external quality assessment scheme.

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 histogram and Global report.

Comments

It is important to read the Final report first, because it contains important information of the samples and results in each round.

The samples have been used before on the round. The sample history can be seen in the client specific report with the histogram.

Concentration of androstenedione in sample B1 was at low level of adults. Two laboratories used mass spectrometry and the other 13 laboratories used immunochemical methods, the most common being Siemens Immulite (N = 9). The IBL ELISA method gave the lowest result and the Siemens Immulite method group the highest result. The difference in the result levels rates between these methods was about 2.5-fold. The mean of the results in the specific mass spectrometry group was lower as expected for all laboratories (3.13 nmol/L vs. 4.82 nmol/L). The overall variation was very high (CV = 30%, n = 15). The consensus average of the B2 round sample exceeded the adult reference range (x = 11.23 nmol/L). Among the method groups, the IBL ELISA user again obtained a significantly lower level of results (4.01 nmol/L) than the other methods. Mass spectrometry also gave lower results than others (mean 7.97 nmol/L n = 2), whereas the Siemens Immulite user group had the highest mean (12.64 nmol/L n = 9). The overall variation was also high for this sample (CV = 22.8%).

In the aldosterone results of sample B1, participants had a moderate standard deviation (CV = 15.2%, n = 14). The mean value of the results was within the reference range (x = 215.3 pmol/L) of healthy persons and agreed well with the results of the mass spectrometry laboratory (218.0 pmol/L). IDS-iSYS results were at the lower limit of the reference range Beckmann Coulter Immunotech at the higher level of the reference range. In sample B2, there were results slightly above the reference interval. The consensus mean was 585.8 pmol/L and the overall variation was reasonably good (CV = 13.1%).

The DHEAS concentration in sample B1 was within the adult patient reference range (x = 6.96 μ mol/L n = 32) and the overall standard deviation of the methods was narrow (CV = 14.1%). The DIASource RIA user received the highest concentration and the Siemens Immulite user group the lowest concentration average, but overall, the round was reasonably successful. The mean concentration of sample B2 in DHEAS was slightly higher than that of sample B1 and at the upper end of adult reference intervals (x = 10.99 μ mol/L n = 32).

2020-03-24

FINAL REPORT

Product no. 2301, 2301S

Samples sent	2020-02-10
Round closed	2020-02-27
Final report	2020-03-24

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
Päivi Ranta
paivi.ranta@labquality.fi

Expert

Esa Hämäläinen, MD, PhD,
adj. Professor

Labquality Oy

Kumpulantie 15
FI-00520 HELSINKI
Finland

Tel. + 358 9 8566 8200
Fax + 358 9 8566 8280

info@labquality.fi
www.labquality.fi



All participants had a relatively good overall variation (CV = 13.7% with a range of 8.9 - 12.9 $\mu\text{mol/L}$) and there were not completely different or inconsistent results.

Oestradiol levels in all laboratories and method groups were on the level of premenopausal women. The lowest concentration of the B1 sample was obtained by users of the bioMerieux Vidas method and mass spectrometry, and the highest by Abbott immunochemical methods (Alinity, Architect). However, the results of the method groups were quite good, and the overall variation was relatively small (CV = 9.0%, n = 68). In sample B2, participants had consistently higher results, with a consensus mean almost twice as high as B1 (0.641 nmol/L, n = 68), with a very good overall variation (CV = 8.5%).

There wasn't anything specific in sample B1. Its concentration was within the normal adult reference range and cortisol results were well within the reference range, regardless of laboratory, both by immunochemical methods and by one user of mass spectrometry. The overall variation was also good (CV = 7.1%, n = 70). In sample B2, the mean concentration of cortisol was also within the normal range for adults ($\bar{x}$ = 529.7 nmol/L n = 71). The lowest result level was given by bioMerieux Vidas and the highest by Siemens Immulite. The latter group also included results that marginally exceeded the upper limit of the commonly used adult reference range of about 650 nmol/L. The overall variation in this sample was also quite good (CV = 9.4%).

In progesterone, the levels of samples B1 and B2 corresponded to the high levels of the female luteal phase. The Beckmann Coulter Access / Unicel method user obtained a significantly lower result from the B1 sample than other laboratories, which was less than half the average of the Roche method group representing the highest mean. The overall standard deviation in the results was moderately high (CV = 18.2%). For sample B2, results were more consistent, except for users of Siemens immunochemical methods, who received lower concentrations. Therefore, the overall coefficient of variation of the round for this sample was quite high (CV = 21.5%).

In sample B1, the concentration of 17-OH-progesterone was like that of males, while sample B2 clearly showed either pathological or, alternatively, high postnatal concentration in children. There was a large variation in the result levels of sample B1. Mean of the mass spectrometry results (4.99 nmol/L, n = 2) is clearly different compared to the lowest result obtained using IBL ELISA and to the highest result obtained using Novatec EIA (4.81 vs. 11.37 nmol/L, respectively). They also differ more than 2-fold. Therefore, the overall variation was exceptionally high (CV = 38.1%). The results of the B2 sample also had a high standard deviation (CV = 29.2%) and corresponded to a very wide range (IDS-iSYS 7.11 nmol/L vs. Novatec EIA 14.55 nmol/L). Indeed, problems with the level of performance of immunochemical methods in the determination of 17OH-progesterone are documented, especially in neonatal specimens.

Testosterone levels in the B1 sample corresponded to normal and high levels in men. Indeed, the results for all method groups were quite consistent throughout this round and the overall variation in the concentrations obtained was quite good (CV = 7.6%). For the B2 round sample, the result was similar. All laboratories received normal male concentrations ($\bar{x}$ = 16.03 nmol/L) and the overall variation was good (CV = 7.0%). Immunochemical testosterone assays perform reasonably well at these high concentrations, unlike in low samples of children and women.

Only four laboratories reported free testosterone. The direct free testosterone methods measure different levels than the calculated free testosterone based on SHBG and total testosterone, or the free testosterone fraction assays based on equilibrium dialysis and ultrafiltration. Thus, these results should be compared only to the results of their own method group. In this case, this comparison could not be made, and the round only gives an indication of the differences between the analytical methods and the results between the laboratories and the possible problems with the traceability of the results of the methods.

End of report

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