



Quantitative Drug Analysis - Cocaine HCl

Test No. 23-5061 Summary Report

Each sample pack consisted of two items with different concentrations of cocaine HCl. Participants were asked to determine the concentration of cocaine HCl in each item. Data were returned from 66 participants and are compiled into the following tables:

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This report contains the data received from the participants in this test. Since these participants are located in many countries around the world, and it is their option how the samples are to be used (e.g., training exercise, known or blind proficiency testing, research and development of new techniques, etc.), the results compiled in the Summary Report are not intended to be an overview of the quality of work performed in the profession and cannot be interpreted as such. The Summary Comments are included for the benefit of participants to assist with maintaining or enhancing the quality of their results. These comments are not intended to reflect the general state of the art within the profession.

Participant results are reported using a randomly assigned "WebCode". This code maintains participant's anonymity, provides linking of the various report sections, and will change with every report.

Manufacturer's Information

Each sample pack consisted of two items containing different concentrations of cocaine hydrochloride (HCl) and levamisole. Participants were requested to analyze each item and report the quantitative determination of cocaine HCl present in the samples.

SAMPLE PREPARATION: The appropriate amounts of cocaine HCl and levamisole for each item were thoroughly mixed to ensure homogeneity.

ITEMS 1 AND 2 (PREPARATION): For each item, approximately 350 mg of the prepared powder was weighed out and deposited into a glassine bag, which was folded and secured with a label. The folded glassine bag was placed into a small zip top bag which was heat sealed then placed into a pre-labeled envelope.

SAMPLE PACK ASSEMBLY: One of each of the Item 1 and Item 2 envelopes were placed into a larger pre-labeled sample pack envelope.

VERIFICATION: Laboratories that conducted predistribution analysis of samples reported consistent results that were comparable to the preparation concentrations of cocaine HCl. The following examination methods were used: GC/FID, UV, LC.

Item	Preparation Concentration Cocaine HCl
1	38%
2	61%

Summary Comments

This test was designed to allow participants to assess their proficiency in the determination of cocaine HCl concentrations. Each participant was supplied with a sample pack consisting of two items containing levamisole and different concentrations of cocaine HCl. Participants were requested to determine the cocaine HCl concentration for both items (Refer to the Manufacturer's Information for preparation details).

The results are separated into two tables: reported results and raw analytical data. The table of reported results shows the concentration that each participant would report according to their normal reporting procedures (e.g. mean, lowest result, truncated results). The table of raw data shows the results from each determination made by the laboratory to produce their reported results. The majority of participants reported using the mean of duplicate/several determinations as their reporting procedure.

The raw data was used to calculate the grand mean and the standard deviation (STD) for each item. None of the 66 participants reported extreme data for either Item 1 nor Item 2. The calculated grand mean of Item 1 was 36.56% with a standard deviation of 3.738, and the grand mean of Item 2 was 60.42% with a standard deviation of 4.351.

As a supplemental examination of the raw data, Bivariate Control Analysis was also performed to analyze the measurements of both samples simultaneously. In this analysis, a comparative performance value (CPV) is provided for each participant, which is a unitless ratio indicating the number of standard deviations a participant's results are from the Grand Mean. The closer a participant's CPV is to zero, the more consistent their results are with the other participants' data. For the graphical portion, an ellipse was drawn so that 95% of the time a randomly selected participant was inside of it. Four participants, whose results fell outside of the 95% ellipse, but within the 99% control limit, were marked with an "*" and were included in the calculations. For more information regarding Bivariate Control Analysis, please see the supplemental section at the end of this report.

Participants used a variety of methods to examine the samples. The most common method of analysis utilized was GC/FID, followed by LC and GC/MS.

Reported Results

What is the concentration of cocaine HCl in each of the samples?

TABLE 1

WebCode	Item 1 Reported Concentration (units)	Item 2 Reported Concentration (units)	Uncertainty (k)
Preparation concentration:	38%	61%	
2QNUNQ	36.4 ± 4.7 (%)	60.6 ± 4.7 (%)	2
2U7VQP	35 ± 2 (%)	57 ± 4 (%)	2
2ZAXU6	37.2 ± 19.1 (%)	63.3 ± 11 (%)	2
33KV8L	36.4 ± 6.3 (%)	58.9 ± 6.5 (%)	2
3ECNEA	34.9 ± 3.1 (%)	58.5 ± 5.1 (%)	3
3PRDDE	37.4 ± 3.3 (%)	60.5 ± 5.3 (%)	3
3XKQBT	35.9 ± 6.7 (%)	60.9 ± 6.7 (%)	2
3YWVGX	33.6 ± 1.7 (%)	57.4 ± 2.9 (%)	
4CZB4K	52.996 ± 2.638 (MG%)	78.912 ± 0.4173 (MG%)	3
4VCV8F	32.6 ± 2.9 (%)	59.4 ± 5.2 (%)	3
62WDZH	37.1 ± 2.4 (%)	61.3 ± 2.4 (%)	2
68NM7A	36.4% ± 1.4% (weight %)	59.7% ± 1.1% (weight %)	2
6FGVTL	126 ± 15 (milligrams)	211 ± 25 (milligrams)	2
7LGW7K	36.6 (%)	58.1 (%)	
7R4PDE	37 ± 3.1 (%)	61 ± 5.1 (%)	2
7UY4AJ	0.373 ± 0.031 (mg/mg)	0.609 ± 0.038 (mg/mg)	4.3
88EKD8	36.23 ± 2.38 (%)	59.85 ± 2.66 (%)	2
8M4ZAC	25 ± 1.7 (%)	54 ± 3.7 (%)	2

TABLE 1

WebCode	Item 1 Reported Concentration (units)	Item 2 Reported Concentration (units)	Uncertainty (k)
Preparation concentration:	38%	61%	
98VYFB	36.3 ± 3.2 (%)	51.1 ± 4.5 (%)	3
9NHEND	37.2 ± 5.3 (%)	60.9 ± 8.6 (%)	3.07
9TQ3W9	41.0 ± 3.6 (%)	62.7 ± 5.5 (%)	3
9WBPX9	37.8 ± 3.1 (percent)	60.9 ± 4.8 (percent)	2.65
CA3QWD	121 ± 15 (mg)	193 ± 23 (mg)	2
CMBD6B	123 ± 15 (milligrams)	210 ± 25 (milligrams)	2
CN4GHH	35.7 ± 5.0 (%)	58.1 ± 8.2 (%)	3.07
F23AVY	35.1 ± 0.5 (%)	59.9 ± 0.4 (%)	2
F3CCQA	41	64	
F3DBHX	36.6% ± 0.8 (%)	59.9% ± 0.9% (%)	2
F4LNYY	35.94 ± 1.83 (wt %)	60.20 ± 1.18 (wt %)	2
FMXDCW	104 ± 13 (mg)	202 ± 13 (mg)	2
FQXLG8	128 ± 15 (milligrams)	202 ± 24 (milligrams)	2
FW8HM2	42 ± 3.00 (%)	68 ± 4.86 (%)	2
GDRQZP	36.3% ± 0.4 (% by weight)	59.8% ± 0.4% (% by weight)	2
H6TLNZ	35.6 ± 3.1 (%)	62.4 ± 5.5 (%)	3
J4HXR8	32.1 ± 4.5 (%)	54.5 ± 7.7 (%)	3.07
JJTPLY	38 ± 1.4 (%)	62 ± 2.4 (%)	2
JX7XM3	33 ± 4.4 (%)	57 ± 7.5 (%)	2
LVFQ2W	37.4 ± 3.0 (%)	60.9 ± 4.7 (%)	2.65

TABLE 1

WebCode	Item 1 Reported Concentration (units)	Item 2 Reported Concentration (units)	Uncertainty (k)
Preparation concentration:	38%	61%	
LVXJXZ	36.9 ± 6.7 (%)	60.9 ± 6.7 (%)	2
LX43Z3	39.64 ± 3.44 (%)	63.56 ± 5.52 (%)	2
MARJ6U	36.7 ± 3.4 (%)	61.2 ± 6.6 (%)	2.65
MX66X	37 ± 5 (%)	61 ± 8 (%)	2.576
N6V49R	32.31 ± 0.63 (%)	59.82% ± 0.69% (%)	2
NZGNJZ	343,5 (µg/mg)	541,5 (µg/mg)	
P6RZWT	36 ± 1.36 (%)	59 ± 2.22 (%)	2
P8Z7HU	35.6 ± 3.3 (%)	59.5 ± 10.2 (%)	2.65
PFTGQ4	35.5 ± 5.0 (%)	58.8 ± 8.3 (%)	3.07
PGHPWY	38.6 ± 2.4 (%)	61.0 ± 2.4 (%)	2
PKLLF2	34.08 (%)	62.14 (%)	
PN4MHZ	37.9 ± 2.3 (%)	61.8 ± 2.3 (%)	2
QXP4TM	36.2 ± 1.6 (mg/ml)	60.6 ± 1.9 (mg/ml)	
TFZXDR	30.53 ± 17.89 (g/100g)	48.77 ± 4.02 (g/100g)	
TMFHEJ	32.2% ± 1.0% (weight %)	59.3% ± 0.1% (weight %)	2
TXYLR	35.7 ± 3.1 (%)	60.8 ± 5.3 (%)	3
UK8NCR	39.9 ± 6.7 (%)	64.1 ± 6.7 (%)	2
UW23FU	119 ± 5 (mg)	199 ± 8 (mg)	4.3
VQR9UX	37.68 ± 3.69 (%)	62.86 ± 1.61 (%)	2
VW2LEG	40.3 ± 2.2 (percent)	63.9 ± 2.2 (percent)	3

TABLE 1

WebCode	Item 1 Reported Concentration (units)	Item 2 Reported Concentration (units)	Uncertainty (k)
Preparation concentration:	38%	61%	
WF6NPR	39.2 ± 2.4 (%)	61.9 ± 2.4 (%)	2
XKBMW	33.93 ± 3 (%)	53.70 ± 3 (%)	2
XLAM6N	35.8 ± 5.1 (%)	57.8 ± 8.1 (%)	3.07
XVAE62	39.03 ± 0.467 (%)	59.01 ± 0.467 (%)	2
XW49ZK	38 ± 3.4 (%)	61 ± 5.6 (%)	2
Z4F4TK	37 ± 2.9 (%)	62 ± 4.9 (%)	2
ZD8ECR	34.3 ± 4.9 (%)	58.5 ± 8.2 (%)	3.07
ZPM6CH	35 ± 6 (%)	63 ± 10 (%)	2.576

Reporting Procedures

TABLE 2

WebCode	Reporting Procedures
2QNUNQ	The mean of duplicate/several determinations.
2U7VQP	The mean of duplicate/several determinations.
2ZAXU6	The mean of duplicate/several determinations.
33KV8L	The mean of duplicate/several determinations.
3ECNEA	single sample
3PRDDE	Single Sample
3XKQBT	The mean of duplicate/several determinations.
3YWMGX	The mean of duplicate/several determinations.
4CZB4K	The mean of duplicate/several determinations.
4VCV8F	single sample
62WDZH	The mean of duplicate/several determinations.
68NM7A	The mean of duplicate/several determinations.
6FGVTL	The mean of duplicate/several determinations.
7LGW7K	The mean of duplicate/several determinations.
7R4PDE	The mean of duplicate/several determinations.
7UY4AJ	The mean of duplicate/several determinations.
88EKD8	The mean of duplicate/several determinations.
8M4ZAC	The mean of duplicate/several determinations.
98VYFB	Single Sample
9NHEND	The mean of duplicate/several determinations.
9TQ3W9	single sample

TABLE 2

WebCode	Reporting Procedures
9WBPX9	The mean of duplicate/several determinations.
CA3QWD	The mean of duplicate/several determinations.
CMBD6B	The mean of duplicate/several determinations.
CN4GHH	The mean of duplicate/several determinations.
F23AVY	The mean of duplicate/several determinations.
F3CCQA	The mean of duplicate/several determinations.
F3DBHX	The mean of duplicate/several determinations.
F4LNYY	The mean of duplicate/several determinations.
FMXDCW	The mean of duplicate/several determinations.
FQXLG8	The mean of duplicate/several determinations.
FW8HM2	The purity of a sample is determined by comparison with a standard solution, using a 1-point calibration curve (one determination).
GDRQZP	The mean of duplicate/several determinations.
H6TLNZ	single sample
J4HXR8	The mean of duplicate/several determinations.
JJTPLY	The mean of duplicate/several determinations.
JX7XM3	The mean of duplicate/several determinations.
LVFQ2W	The mean of duplicate/several determinations.
LVXJXZ	The mean of duplicate/several determinations.
LX43Z3	The mean of duplicate/several determinations.
MARJ6U	The mean of duplicate/several determinations.
MXX66X	The mean of duplicate/several determinations.
N6V49R	The lowest value of duplicate/several determinations.

TABLE 2

WebCode	Reporting Procedures
NZGNJZ	The mean of duplicate/several determinations.
P6RZWT	The mean of duplicate/several determinations.
P8Z7HU	The mean of duplicate/several determinations.
PFTGQ4	The mean of duplicate/several determinations.
PGHPWY	The mean of duplicate/several determinations.
PKLLF2	The mean of duplicate/several determinations.
PN4MHZ	The mean of duplicate/several determinations.
QXP4TM	The mean of duplicate/several determinations.
TFZXDR	The mean of duplicate/several determinations.
TMFHEJ	The lowest value of duplicate/several determinations.
TXYLR	Single sample
UK8NCR	The mean of duplicate/several determinations.
UW23FU	Our laboratory does not report cocaine HCl we report cocaine base based of the average of 3 aliquots each of which are injected 4 times.
VQR9UX	The mean of duplicate/several determinations.
W2LEG	The mean of duplicate/several determinations.
WF6NPR	The mean of duplicate/several determinations.
XKBMWY	The mean of duplicate/several determinations.
XLAM6N	The mean of duplicate/several determinations.
XVAE62	The mean of duplicate/several determinations.
XW49ZK	The mean of duplicate/several determinations.
Z4F4TK	The mean of duplicate/several determinations.
ZD8ECR	The mean of duplicate/several determinations.

TABLE 2

WebCode	Reporting Procedures
ZPM6CH	The mean of duplicate/several determinations.

Response Summary		Participants: 66
The mean of duplicate/several determinations:	55	(83.3%)
The lowest value of duplicate/several determinations:	2	(3.0%)
Single determination:	7	(10.6%)
Other:	2	(3.0%)

Raw Data & Statistical Analysis

List of raw data determinations in percent.

TABLE 3 - Item 1

WebCode	Preparation target concentration : 38%						Mean
2QNUNQ	32.40	32.70					32.55
2U7VQP	35.90	35.70	35.20	35.00			35.45
2ZAXU6	37.02	35.51	36.59	39.85			37.24
33KV8L	36.20	36.30	33.40	33.40	40.50	40.50	36.72
3ECNEA	34.94	63.00					48.97
3PRDDE	37.42						37.42
3XKQBT	35.97	35.92	35.94	35.88	35.93	35.95	35.93
3YWMGX	33.60						33.60
4CZB4K	52.01	53.37	53.32				52.90
4VCV8F	32.65						32.65
62WDZH	37.10	37.20	36.90	37.00			37.05
68NM7A	35.81	36.70	36.53	36.73			36.44
6FGVTL	37.00	38.00					37.50
7LGW7K	36.67	36.74	36.31				36.57
7R4PDE	36.80	36.30					36.55
7UY4AJ	37.30						37.30
88EKD8	36.87	35.59					36.23
8M4ZAC	23.60	26.10					24.85
98VYFB	36.39						36.39
9NHEND	37.40	36.90					37.15
9TQ3W9	41.10						41.10
9WBPX9	37.84	37.54	38.63	37.72	37.85	37.48	37.84
CA3QWD	37.00	37.00					37.00
CMBD6B	38.00	38.00					38.00

TABLE 3 - Item 1

WebCode	Preparation target concentration : 38%						Mean
CN4GHH	34.90	36.50					35.70
F23AVY	34.87	35.01	35.10	35.57			35.14
F3CCQA	40.40	40.81					40.60
F3DBHX	36.87	36.52	36.25	36.77			36.60
F4LNY	35.38	36.66	35.59	36.13			35.94
FMXDCW	29.58	30.47	30.54	31.10	29.86	29.84	30.23
FQXLG8	39.00	38.00					38.50
FW8HM2	42.24						42.24
GDRQZP	36.00	36.40	36.50	36.40			36.33
H6TLNZ	35.70						35.70
J4HXR8	31.70	32.60					32.15
JJTPLY	37.60	38.20					37.90
JX7XM3	35.21	34.82	31.20	31.60			33.21
LVFQ2W	37.29	37.89	36.90	36.99	37.53	37.55	37.36
LVXJZ	36.60	36.60	36.58	37.31	37.31	37.28	36.95
LX43Z3	36.52	33.93					35.23
MARJ6U	37.61	37.04	36.88	36.44	36.56	35.51	36.67
MX66X	35.87	38.48	37.54				37.30
N6V49R	32.02	31.98	32.42	32.82			32.31
NZGNJZ	33.80	34.90					34.35
P6RZWT	37.32	34.30					35.81
P8Z7HU	36.08	35.96	35.50	34.54	35.10	36.36	35.59
PFTGQ4	35.30	35.80					35.55
PGHPWY	38.40	38.47	38.80	38.83			38.62
PKLLF2	33.73	34.44					34.09
PN4MHZ	37.35	37.36	38.37	38.55			37.91

TABLE 3 - Item 1

WebCode	Preparation target concentration : 38%						Mean
QXP4TM	36.00	36.41					36.21
TFZXDR	32.68	29.70	31.38	28.35			30.53
TMFHEJ	32.94	32.02	31.62	32.38			32.24
TXYXLR	35.78						35.78
UK8NCR	40.22	40.15	40.14	39.62	39.64	39.62	39.90
UW23FU	36.50						36.50
VQR9UX	39.29	36.84	36.92				37.68
VV2LEG	40.40	40.30					40.35
WF6NPR	39.57	39.84	38.84	38.91			39.29
XKBMYW	31.95	36.67	35.16	31.96			33.94
XLAM6N	35.80	35.80					35.80
XVAE62	39.08	39.08	38.97	38.97			39.03
XW49ZK	36.80	38.40					37.60
Z4F4TK	37.04	37.04	36.53	36.92			36.88
ZD8ECR	34.10	34.40					34.25
ZPM6CH	34.71	36.47	36.27				35.82

Statistical Analysis for Item 1		Participants: 66
Preparation Concentration:	38%	Number of Participants Included: 66
Grand Mean:	36.56	Number of Participants Excluded: 0
Standard Deviation:	3.738	Number of Participants without Raw Data: 0

TABLE 3 - Item 2

WebCode	Preparation target concentration : 61%						Mean
2QNUNQ	53.80	54.50					54.15
2U7VQP	57.70	58.40	57.10	57.30			57.63
2ZAXU6	65.60	63.78	62.42	63.24	61.50		63.31
33KV8L	60.70	60.40	57.30	57.30	59.30	59.40	59.07
3ECNEA	58.54	93.00					75.77
3PRDDE	60.50						60.50
3XKQBT	62.38	62.31	62.58	59.38	59.38	59.68	60.95
3YWMGX	57.40						57.40
4CZB4K	79.01	78.76	78.97				78.91
4VCV8F	59.46						59.46
62WDZH	61.40	61.50	61.10	61.10			61.28
68NM7A	59.70	59.94	60.02	59.26			59.73
6FGVTL	62.00	62.00					62.00
7LGW7K	57.97	58.27	58.05				58.09
7R4PDE	61.90	60.10					61.00
7UY4AJ	60.90						60.90
88EKD8	60.11	59.61					59.86
8M4ZAC	54.40	52.90					53.65
98VYFB	51.13						51.13
9NHEND	60.60	61.30					60.95
9TQ3W9	62.75						62.75
9WBPX9	60.30	61.08	60.38	61.08	61.29	61.43	60.93
CA3QWD	59.00	61.00					60.00
CMBD6B	64.00	63.00					63.50
CN4GHH	58.00	58.40					58.20
F23AVY	60.01	60.14	59.62	59.86			59.91

TABLE 3 - Item 2

WebCode	Preparation target concentration : 61%						Mean
F3CCQA	63.04	63.96					63.50
F3DBHX	60.03	59.40	60.13	60.09			59.91
F4LNYY	60.14	60.74	60.01	59.92			60.20
FMXDCW	58.34	56.72	58.17	59.26	58.55	57.39	58.07
FQXLG8	62.00	60.00					61.00
FW8HM2	67.87						67.87
GDRQZP	60.10	59.50	59.90	59.70			59.80
H6TLNZ	62.42						62.42
J4HXR8	53.60	55.60					54.60
JJTPLY	62.20	62.70					62.45
JX7XM3	56.40	57.23	57.20	55.36			56.55
LVFQ2W	60.66	60.87	61.30	61.17	60.58	61.12	60.95
LVXJZ	60.57	60.66	60.70	61.50	61.04	61.21	60.94
LX43Z3	61.01	59.98					60.50
MARJ6U	60.76	60.40	61.49	60.47	59.59	64.62	61.22
MXX66X	62.97	57.86	63.06				61.30
N6V49R	59.24	57.74	60.24	60.05			59.32
NZGNJZ	55.30	53.00					54.15
P6RZWT	60.21	58.29					59.25
P8Z7HU	65.59	61.13	57.19	57.69	59.10	56.28	59.50
PFTGQ4	58.40	59.30					58.85
PGHPWY	61.85	62.16	59.94	60.08			61.01
PKLLF2	61.86	62.43					62.14
PN4MHZ	61.44	61.53	62.18	62.20			61.84
QXP4TM	60.07	61.25					60.66
TFZXDR	48.78	48.73	48.80	48.74			48.76

TABLE 3 - Item 2

WebCode	Preparation target concentration : 61%						Mean
TMFHEJ	59.37	59.42	59.42	59.33			59.39
TXYLR	60.89						60.89
UK8NCR	65.55	65.32	65.32	62.85	62.92	62.90	64.14
UW23FU	60.80						60.80
VQR9UX	62.73	61.91	63.93				62.86
VW2LEG	64.40	63.40					63.90
WF6NPR	61.24	61.38	62.60	62.68			61.97
XKBMYW	51.89	55.75	54.56	52.61			53.70
XLAM6N	58.70	56.90					57.80
XVAE62	59.13	59.13	58.90	58.90			59.02
XW49ZK	61.90	60.10					61.00
Z4F4TK	62.59	62.64	62.17	62.17			62.39
ZD8ECR	59.30	57.80					58.55
ZPM6CH	62.21	64.20	63.38				63.26

Statistical Analysis for Item 2		Participants: 66
Preparation Concentration:	61%	Number of Participants Included: 66
Grand Mean:	60.42	Number of Participants Excluded: 0
Standard Deviation:	4.351	Number of Participants without Raw Data: 0

TABLE 3 - Response Summary

Response Summary	Item 1	Item 2
Preparation concentration	38%	61%
Grand Mean	36.56	60.42
Standard Deviation	3.738	4.351

Method of Analysis

TABLE 4

WebCode	GC	LC	FTIR	GC/MS	LC/MS	UV	GC/FID	NMR	Other
2QNUNQ				✓					
2U7VQP		✓				✓			
2ZAXU6							✓		
33KV8L							✓		
3ECNEA		✓							
3PRDDE		✓							
3XKQBT							✓		
3YWMGX							✓		
4CZB4K			✓	✓					HPLC / LC Q-TOF MS
4VCV8F		✓							
62WDZH			✓	✓			✓		
68NM7A								✓	
6FGVTL				✓					
7LGW7K									HPLC
7R4PDE								✓	
7UY4AJ									HPLC
88EKD8		✓							
8M4ZAC							✓		
98VYFB		✓							
9NHEND							✓		
9TQ3W9		✓							
9WBPX9							✓		
CA3QWD				✓					
CMBD6B				✓					
CN4GHH							✓		
F23AVY								✓	
F3CCQA					✓				
F3DBHX								✓	
F4LNYY									NMR
FMXDCW							✓		
FQXLG8				✓					
FW8HM2				✓					
GDRQZP								✓	

TABLE 4

WebCode	GC	LC	FTIR	GC/MS	LC/MS	UV	GC/FID	NMR	Other
H6TLNZ		✓							Electronic Balance
J4HXR8				✓			✓		
JJTPLY								✓	
JX7XM3					✓				
LVFQ2W							✓		
LVXJXZ							✓		
LX43Z3							✓		
MARJ6U							✓		
MXX66X					✓				
N6V49R								✓	
NZGNJZ		✓							
P6RZWT		✓							
P8Z7HU							✓		
PFTGQ4							✓		
PGHPWY			✓	✓			✓		
PKLLF2							✓		
PN4MHZ							✓		
QXP4TM		✓							
TFZXDR							✓		
TMFHEJ								✓	
TXYXLR		✓							
UK8NCR							✓		
UW23FU		✓				✓			
VQR9UX		✓							
VV2LEG									HPLC
WF6NPR							✓		
XKBMYW				✓			✓		
XLAM6N				✓			✓		
XVAE62		✓		✓					Raman
XW49ZK								✓	
Z4F4TK									HPLC
ZD8ECR				✓			✓		
ZPM6CH					✓				

Response Summary								Participants: 66
Method:	GC	LC	FTIR	GC/MS	LC/MS	UV	GC/FID	NMR
Participants:	0	15	3	14	4	2	26	9
Percent:	0.0%	23%	5%	21.2%	6.1%	3.0%	39.4%	13.6%

Additional Comments

TABLE 5

WebCode	Additional Comments
4CZB4K	Both sample contain Levamisole
62WDZH	GCMS was only used for qualitative; FTIR was used to identify HCl
6FGVTL	Cocaine purity routinely reported as base form.
88EKD8	Tetramisole indicated in both items
CA3QWD	Cocaine purity routinely reported as base form.
CMBD6B	Cocaine purity routinely reported as base form.
FQXLG8	Cocaine purity routinely reported as base form.
FW8HM2	The results obtained through this method are reported as being within a 20% purity range. To obtain the reporting range, the obtained percentage purity is rounded to the nearest 5%. Subtracting and adding 10% to the rounded result will give you the 20% reporting range. Purity range for Item 1 : 30%-50% Purity range for Item 2: 60%-80%
P6RZWT	Levamisole also identified.
XKBMW	Levamisole was indicated in item 1 and 2
XVAE62	both samples contain levamisole confirmed by GC MS and HPLC DAD

Supplemental: Hotelling T-Squared Bivariate Control Analysis

Hotelling T-Squared Bivariate Control Analysis is used in many other industries to examine results. Although not typically used in forensic science, CTS is presenting an introduction to this type of statistical data analysis. A laboratory may choose to delve deeper in a participant's results by studying both sets of statistics available in this report. The statistics presented in Table 3 (Raw Data) of this report examine the results of each item independently of each other. However, because the same materials are chosen for both samples, there should be a correlation of measurement performance between the two samples. A bivariate analysis technique judges measurement performance on both samples simultaneously, represented as an ellipse. For each participant, the mean of Item 1 (x-axis) is plotted against the mean of Item 2 (y-axis). The horizontal and vertical cross-hairs are the grand means for each Item. When 20 or more participants are included in the statistics, an ellipse is drawn so that 95% of the time a randomly selected participant will be included inside.

When considering your participant's position on the plot relative to the ellipse, remember that, generally speaking, if a participant's plotted point falls on the major axis outside of the ellipse, the participant is consistent in its measurements between the two samples but exhibits an offset from the grand mean (systematic difference). If a plotted point falls to the side of the ellipse, it indicates possible differences in the way that the participant tested the two samples or differences in sample behavior (consistency difference). The two-sample plot enables you to see which sample, if either, is "extreme" and to ascertain the nature of the "extreme" data.

Systematic Difference

Bias is illustrated in the control ellipse on the two sample plot. If a particular analysis/sample combination did not show bias, the control ellipse would become a circle. Differences in procedures, conditions, instrumentation and sample preparation all contribute to the bias of a participant. When these differences become too large, a participant may receive a Data Flag. When the test results for both samples are both high or low compared to the group, a participant has a fixed set of factors on which to focus to identify a cause. Furthermore, since additional testing on similar samples should produce similar high or low results, it is possible to determine that a systematic error has been successfully corrected.

Consistency Difference

The participant's results indicate that there are differences in the way the two samples are tested (the plotted point falls to the side of the ellipse). This type of error may be attributed to the analyst deviating from the procedure when testing one of the samples or a material interaction occurrence with the instrument or room conditions. The inconsistency is reflected in the Comparative Performance Values (CPV) for the two samples, such as a +1.5 CPV for Item 1 and a -2.2 CPV for Item 2. CPV is the number of standard deviations a value is from the grand mean.

Key for Data Flags		
<u>Data Flag</u>	<u>Statistically Included/Excluded</u>	<u>Explanation</u>
*	Included	Results fall outside 95% ellipse, but within a 99% control limit (ellipse) that is calculated.
X	Excluded	Results fall outside of 99% control limit.
M	Excluded	Data is missing for at least one item

Bivariate Control Analysis

WebCode	Data Flag	Item 1			Item 2		
		Participant Mean	Difference from Grand Mean	CPV	Participant Mean	Difference from Grand Mean	CPV
2QNUNQ		32.55	-4.013	-1.07	54.15	-6.266	-1.44
2U7VQP		35.45	-1.113	-0.30	57.63	-2.791	-0.64
2ZAXU6		37.24	0.679	0.18	63.31	2.890	0.66
33KV8L		36.72	0.154	0.04	59.07	-1.349	-0.31
3ECNEA	*	48.97	12.408	3.32	75.77	15.352	3.53
3PRDDE		37.42	0.862	0.23	60.50	0.089	0.02
3XKQBT		35.93	-0.630	-0.17	60.95	0.538	0.12
3YWMGX		33.60	-2.963	-0.79	57.40	-3.016	-0.69
4CZB4K	*	52.90	16.337	4.37	78.91	18.498	4.25
4VCV8F		32.65	-3.913	-1.05	59.46	-0.959	-0.22
62WDZH		37.05	0.487	0.13	61.28	0.859	0.20
68NM7A		36.44	-0.121	-0.03	59.73	-0.686	-0.16
6FGVTL		37.50	0.937	0.25	62.00	1.584	0.36
7LGW7K		36.57	0.011	0.00	58.09	-2.323	-0.53
7R4PDE		36.55	-0.013	0.00	61.00	0.584	0.13
7UY4AJ		37.30	0.737	0.20	60.90	0.484	0.11
88EKD8		36.23	-0.333	-0.09	59.86	-0.556	-0.13
8M4ZAC	*	24.85	-11.713	-3.13	53.65	-6.766	-1.55
98VYFB	*	36.39	-0.168	-0.05	51.13	-9.289	-2.13
9NHEND		37.15	0.587	0.16	60.95	0.534	0.12
9TQ3W9		41.10	4.535	1.21	62.75	2.329	0.54
9WBPX9		37.84	1.280	0.34	60.93	0.511	0.12
CA3QWD		37.00	0.437	0.12	60.00	-0.416	-0.10
CMBD6B		38.00	1.437	0.38	63.50	3.084	0.71
CN4GHH		35.70	-0.863	-0.23	58.20	-2.216	-0.51

WebCode	Data Flag	Item 1			Item 2		
		Participant Mean	Difference from Grand Mean	CPV	Participant Mean	Difference from Grand Mean	CPV
F23AVY		35.14	-1.426	-0.38	59.91	-0.508	-0.12
F3CCQA		40.60	4.037	1.08	63.50	3.085	0.71
F3DBHX		36.60	0.039	0.01	59.91	-0.503	-0.12
F4LNYY		35.94	-0.623	-0.17	60.20	-0.213	-0.05
FMXDCW		30.23	-6.332	-1.69	58.07	-2.345	-0.54
FQXLG8		38.50	1.937	0.52	61.00	0.584	0.13
FW8HM2		42.24	5.677	1.52	67.87	7.454	1.71
GDRQZP		36.33	-0.238	-0.06	59.80	-0.616	-0.14
H6TLNZ		35.70	-0.868	-0.23	62.42	2.007	0.46
J4HXR8		32.15	-4.413	-1.18	54.60	-5.816	-1.34
JJTPLY		37.90	1.337	0.36	62.45	2.034	0.47
JX7XM3		33.21	-3.356	-0.90	56.55	-3.868	-0.89
LVFQ2W		37.36	0.795	0.21	60.95	0.534	0.12
LVXJXZ		36.95	0.385	0.10	60.94	0.529	0.12
LX43Z3		35.23	-1.338	-0.36	60.50	0.079	0.02
MARJ6U		36.67	0.110	0.03	61.22	0.806	0.19
MX66X		37.30	0.734	0.20	61.30	0.881	0.20
N6V49R		32.31	-4.253	-1.14	59.32	-1.098	-0.25
NZGNJZ		34.35	-2.213	-0.59	54.15	-6.266	-1.44
P6RZWT		35.81	-0.753	-0.20	59.25	-1.166	-0.27
P8Z7HU		35.59	-0.973	-0.26	59.50	-0.919	-0.21
PFTGQ4		35.55	-1.013	-0.27	58.85	-1.566	-0.36
PGHPWY		38.62	2.060	0.55	61.01	0.591	0.14
PKLLF2		34.09	-2.478	-0.66	62.14	1.726	0.40
PN4MHZ		37.91	1.344	0.36	61.84	1.422	0.33
QXP4TM		36.21	-0.358	-0.10	60.66	0.244	0.06
TFZXDR		30.53	-6.036	-1.61	48.76	-11.653	-2.68

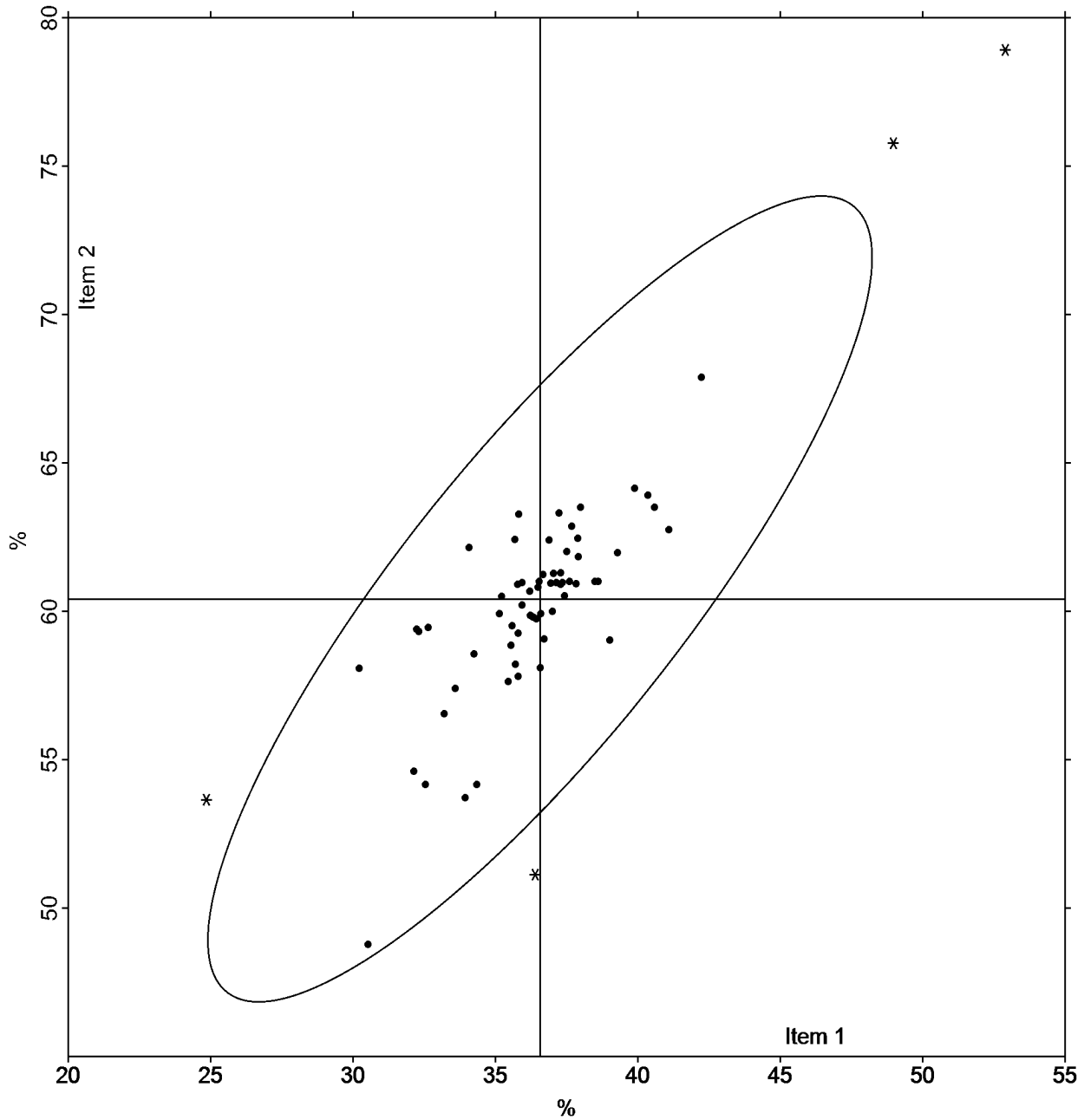
WebCode	Data Flag	Item 1			Item 2		
		Participant Mean	Difference from Grand Mean	CPV	Participant Mean	Difference from Grand Mean	CPV
TMFHEJ		32.24	-4.323	-1.16	59.39	-1.031	-0.24
TXYXLR		35.78	-0.784	-0.21	60.89	0.478	0.11
UK8NCR		39.90	3.337	0.89	64.14	3.728	0.86
UW23FU		36.50	-0.063	-0.02	60.80	0.384	0.09
VQR9UX		37.68	1.120	0.30	62.86	2.441	0.56
VW2LEG		40.35	3.787	1.01	63.90	3.484	0.80
WF6NPR		39.29	2.727	0.73	61.97	1.557	0.36
XKBMYW		33.94	-2.628	-0.70	53.70	-6.713	-1.54
XLAM6N		35.80	-0.763	-0.20	57.80	-2.616	-0.60
XVAE62		39.03	2.462	0.66	59.02	-1.401	-0.32
XW49ZK		37.60	1.037	0.28	61.00	0.584	0.13
Z4F4TK		36.88	0.319	0.09	62.39	1.977	0.45
ZD8ECR		34.25	-2.313	-0.62	58.55	-1.866	-0.43
ZPM6CH		35.82	-0.746	-0.20	63.26	2.848	0.65

Response Summary	Item 1	Item 2	Participants: 66
Preparation Concentration	38%	61%	
Grand Mean	36.56	60.42	
Standard Deviation	3.74	4.35	
Participants Included: 66	Participants Excluded: 0	Participants without Raw Data for both items: 0	

Bivariate Control Analysis

Item 1 Grand Mean: 36.56

Item 2 Grand Mean: 60.42



-End of Report-
(Appendix may follow)

Test No. 23-5061: Quantitative Drug Analysis - Cocaine HCl

DATA MUST BE SUBMITTED BY **Dec. 11, 2023, 11:59 p.m. EST** TO BE INCLUDED IN THE REPORT

Participant Code: U1234A

WebCode: 38RK88

The Accreditation Release section can be accessed by using the "Continue to Final Submission" button above. This information can be entered at any time prior to submitting to CTS.

Test Description:

Investigators have submitted two powdered cocaine HCl samples from separate cases to be quantitatively examined. Using your laboratory's procedures, analyze each sample and report the quantitative determination of cocaine HCl present in the samples.

-Please follow your laboratory's policies and procedures for sample homogenization.

-This is not intended as a qualitative test but rather as a quantitative examination of the cocaine HCl present in the samples.

Items Submitted (Sample Pack DQ2):

Items 1 & 2: Powdered cocaine HCl samples

1a.) What is the concentration of cocaine HCl in each of the samples? (Results should be reported using your laboratory reporting criteria for decimal places, uncertainty, and units.)

Reported Concentration	Uncertainty (k= <input style="width: 50px; border: 1px solid black;" type="text" value="1"/>)	Units
Item 1: <input style="width: 150px;" type="text"/>	± <input style="width: 100px;" type="text"/>	(<input style="width: 100px;" type="text"/>)
Item 2: <input style="width: 150px;" type="text"/>	± <input style="width: 100px;" type="text"/>	(<input style="width: 100px;" type="text"/>)

1b.) Are the values listed above:

The mean of duplicate / several determinations?

The lowest value of duplicate / several determinations?

Other? (Specify):

2.) Please list your raw data determinations below in percent of cocaine HCl. (Results not reported in % will be excluded from statistical calculations.)

Item 1 (%) Item 2 (%)

3.) What methods were used to quantitatively examine the items?

- | | | |
|---|--------------------------------|-------------------------------|
| <input type="checkbox"/> GC | <input type="checkbox"/> LC | <input type="checkbox"/> FTIR |
| <input type="checkbox"/> GC/MS | <input type="checkbox"/> LC/MS | <input type="checkbox"/> UV |
| <input type="checkbox"/> GC/FID | <input type="checkbox"/> NMR | |
| <input type="checkbox"/> Other (specify): | <input type="text"/> | |

4.) Additional Comments

Please note: Any additional formatting applied in the free form space below will not transfer to the Summary Report and may cause your information to be illegible. This includes additional spacing and returns that present your responses in lists and tabular formats.

RELEASE OF DATA TO ACCREDITATION BODIES

The Accreditation Release is accessed by pressing the "Continue to Final Submission" button online and can be completed at any time prior to submission to CTS.

CTS submits external proficiency test data directly to ASCLD/LAB, ANAB, and/or A2LA. Please select one of the following statements to ensure your data is handled appropriately.

- This participant's data is intended for submission to ASCLD/LAB, ANAB, and/or A2LA. (Accreditation Release section below must be completed.)
- This participant's data is **not** intended for submission to ASCLD/LAB, ANAB, and/or A2LA.

Have the laboratory's designated individual complete the following steps **only if your laboratory is accredited in this testing/calibration discipline** by one or more of the following Accreditation Bodies.

Step 1: Provide the applicable Accreditation Certificate Number(s) for your laboratory

ANAB Certificate No.
(Include ASCLD/LAB Certificate here)

A2LA Certificate No.

Step 2: Complete the Laboratory Identifying Information in its entirety

Authorized Contact Person and Title

Laboratory Name

Location (City/State)