SOCIETY
OF HAIR
TESTING

«Tit» «Name» «Fam_Nam»
«Organization»
«Address1»
«Address_2»
«PO_Box» «City». «Country»

Sevilla, February, 2017

Proficiency Test 2016-2

Laboratory Code: **«Lab_code»**

Dear participants,

Enclosed you will find the report of the Proficiency Test 2016-2 on Drugs of Abuse in Hair, organized by the Society of Hair Testing.

Each of the participating laboratories received an identifying code. Your particular code is **«Lab_code»**.

Sets of three samples were sent to sixty participating laboratories. Fifty-six of them sent the report forms back.

Sample contents were as follows:

* Sample A contained opiates (6-MAM, morphine and traces of codeine), cocainics (cocaine, BE, norcocaine and cocaethylene), amphetamine compounds (amphetamine methamphetamine and MDMA) and cannabis (THC, CBD, CBN and THC-COOH). It also contained tramadol, AEME and ketamine.

* Sample B opiates (6-MAM, morphine, codeine, acetylcodeine and heroin), cocainics (cocaine, BE, cocaethylene and norcocaine) traces of amphetamine compounds (amphetamine and MDMA) and cannabis (THC, CBD, CBN and THC-COOH). It also contained methadone, diazepam and nordiazepam, tramadol and AEME.

* Sample C contained contained traces of cocainics (cocaine, BE). Median concentration of cocaine is below the cut-off proposed by SoHT.

Z-score

Z-score has been calculated based on robust estimators (median instead of mean and interquartile instead of standard deviation).

Z-score has been calculated as follows:

$$Z\text{-score} = (x - \chi) / IQR$$

Where:

x: Concentration reported by the participant

χ: Median concentration obtained from the participating laboratories

IQR: Interquartile range: It is calculated as: Q3-Q1 (the upper quartile minus the lower quartile)

Q3: Third quartile (percentile 75)

Q1: First quartile (percentile 25)

Decision criteria

The following criteria have been adopted:

Satisfactory results: Z-score $\leq \pm 2$

Questionable results: $2 <$ Z-score ≤ 3

Unsatisfactory results: Z-score ≥ 3

Yours faithfully,

Carmen Jurado

QUALITATIVE RESULTS

Laboratory Code: **Lab**

| Substances	Sample A				Substances	Sample B				Substances	Sample C		
	A	T	F			A	T	F			A	T	F
MAM		P			MAM		P			Cocaine***		P	
Morphine*		P			Morphine		P			BE		P	
Cocaine		P			Codeine		P						
BE		P			Cocaine		P						
Amphetamine		P			BE		P						
Methamphetamine		P			Amphetamine**		P						
MDMA		P			THC		P						
THC		P			THC-COOH		P						
THC-COOH		P											

* The median concentration of Morphine in Sample A is 0.11 ng/mg, which is lower than the cut-off proposed by SoHT (0.2 ng/mg).

** The median concentration of Amphetamine in Sample B is 0.17 ng/mg, which is lower than the cut-off proposed by SoHT (0.2 ng/mg).

*** The median concentration of Cocaine in Sample C is 0.14 ng/mg, which is lower than the cut-off proposed by SoHT (0.5 ng/mg).

A: Your answer   **P:** Positive   **NR:** Not reported   **FN:** False Negative
T: True answer   **N**: Negative   **NA:** Not analyzed   **FP:** False Positive
**F:** False answer

Comments:
- Sample A contains methadone, CBD, CBN, norcocaine, cocaethylene and tramadol and traces of codeine (0.028 ng/mg, median concentration).
- Sample B contains methadone, CBD, CBN norcocaine, cocaethylene, diazepam, nordiazepam and tramadol and traces of MDMA (0.034 ng/mg, median concentration).
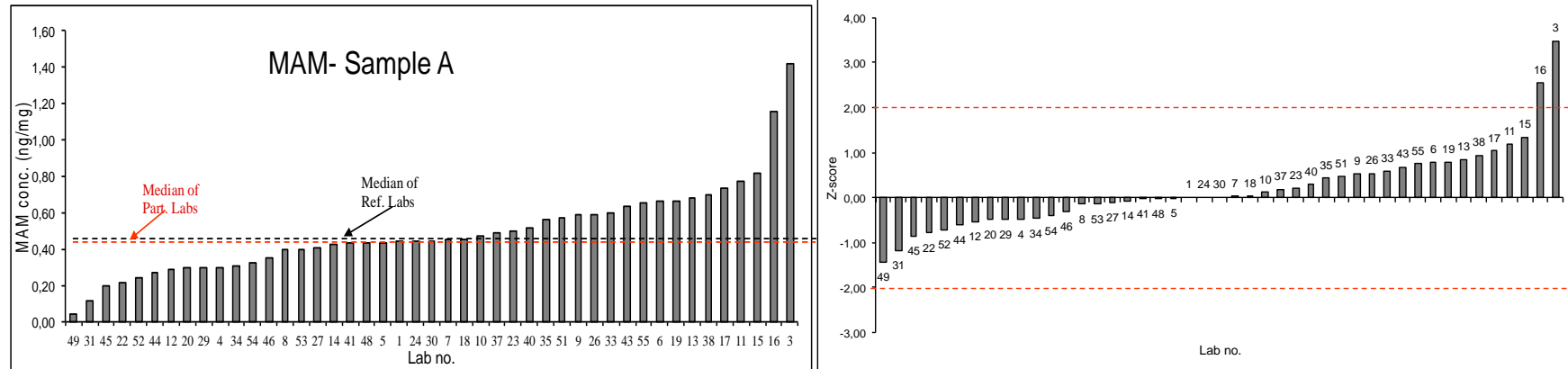
Lab.	MAM (ng/mg)	Z-score	Result		Lab.	MAM (ng/mg)	Z-score	Result
49	0,04	-1,44	Satisfactory		37	0,49	0,18	Satisfactory
31	0,11	-1,18	Satisfactory		23	0,50	0,21	Satisfactory
45	0,20	-0,86	Satisfactory		40	0,52	0,29	Satisfactory
22	0,22	-0,79	Satisfactory		35	0,56	0,43	Satisfactory
52	0,24	-0,71	Satisfactory		51	0,57	0,46	Satisfactory
44	0,27	-0,61	Satisfactory		9	0,59	0,53	Satisfactory
12	0,29	-0,54	Satisfactory		26	0,59	0,54	Satisfactory
20	0,30	-0,50	Satisfactory		33	0,60	0,58	Satisfactory
29	0,30	-0,50	Satisfactory		43	0,63	0,68	Satisfactory
4	0,30	-0,50	Satisfactory		55	0,65	0,75	Satisfactory
34	0,31	-0,47	Satisfactory		6	0,66	0,79	Satisfactory
54	0,33	-0,41	Satisfactory		19	0,66	0,79	Satisfactory
46	0,35	-0,32	Satisfactory		13	0,68	0,85	Satisfactory
8	0,40	-0,14	Satisfactory		38	0,70	0,94	Satisfactory
53	0,40	-0,14	Satisfactory		17	0,73	1,04	Satisfactory
27	0,41	-0,11	Satisfactory		11	0,77	1,18	Satisfactory
14	0,42	-0,07	Satisfactory		15	0,82	1,35	Satisfactory
41	0,43	-0,04	Satisfactory		16	1,15	2,54	Questionable
48	0,43	-0,04	Satisfactory		3	1,42	3,48	Unsatisfactory
5	0,44	-0,01	Satisfactory		25	N		
1	0,44	0,00	Satisfactory		2	N		
24	0,44	0,00	Satisfactory		39	N		
30	0,44	0,00	Satisfactory		50	N		
7	0,45	0,04	Satisfactory					
18	0,45	0,04	Satisfactory					
10	0,47	0,11	Satisfactory					

Average	0,49
SD	0,24
CV%	49,36
Median	0,44
Minimum	0,04
Quartile 25	0,33
Quartile 75	0,60
Maximum	1,42
Iqr	0,28

Morphine- Sample A
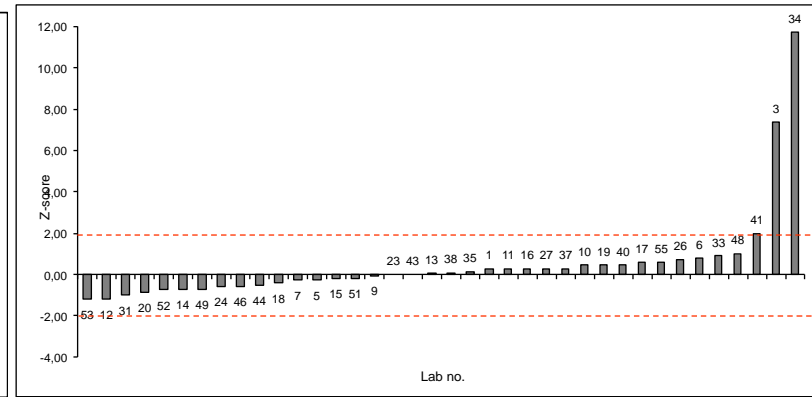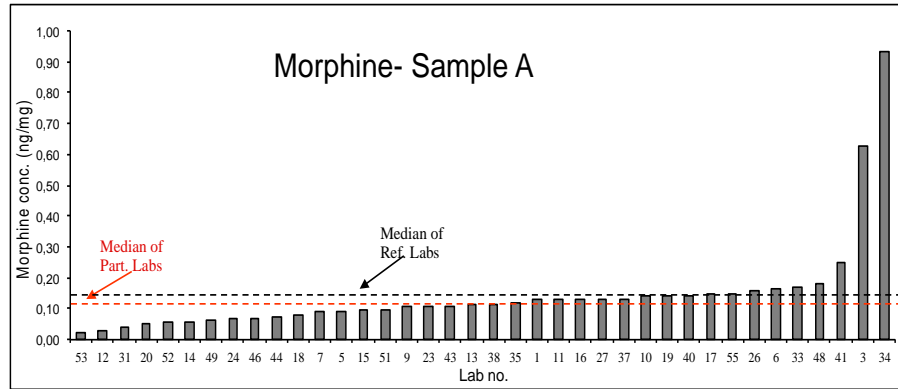
Lab.	Morphine (ng/mg)	Z-score	Result
53	0,03	-1,21	Satisfactory
12	0,03	-1,20	Satisfactory
31	0,04	-1,00	Satisfactory
20	0,05	-0,86	Satisfactory
52	0,06	-0,76	Satisfactory
14	0,06	-0,74	Satisfactory
49	0,06	-0,71	Satisfactory
24	0,07	-0,57	Satisfactory
46	0,07	-0,57	Satisfactory
44	0,07	-0,54	Satisfactory
18	0,08	-0,43	Satisfactory
7	0,09	-0,29	Satisfactory
5	0,09	-0,27	Satisfactory
15	0,10	-0,20	Satisfactory
51	0,10	-0,19	Satisfactory
9	0,11	-0,06	Satisfactory
23	0,11	0,00	Satisfactory
43	0,11	0,00	Satisfactory
13	0,11	0,04	Satisfactory
38	0,12	0,07	Satisfactory
35	0,12	0,14	Satisfactory
1	0,13	0,29	Satisfactory
11	0,13	0,29	Satisfactory
16	0,13	0,29	Satisfactory
27	0,13	0,29	Satisfactory
37	0,13	0,29	Satisfactory

Lab.	Morphine (ng/mg)	Z-score	Result
10	0,14	0,43	Satisfactory
19	0,14	0,43	Satisfactory
40	0,14	0,43	Satisfactory
17	0,15	0,57	Satisfactory
55	0,15	0,57	Satisfactory
26	0,16	0,71	Satisfactory
6	0,16	0,76	Satisfactory
33	0,17	0,89	Satisfactory
48	0,18	1,00	Satisfactory
41	0,25	2,00	Satisfactory
3	0,63	7,36	Unsatisfactory
34	0,93	11,71	Unsatisfactory
4	<0,20		
2	N		
30	P		
8	N		
22	N		
29	N		
39	N		
45	N		
50	N		
54	N		
56	N		
25	N		

Average	0,14
SD	0,16
CV%	110,30
Median	0,11
Minimum	0,03
Quartile 25	0,07
Quartile 75	0,14
Maximum	0,93
Iqr	0,07

The median Morphine concentration is below the cut-off proposed by SoHT (0.20 ng/mg)

Cocaine- Sample A
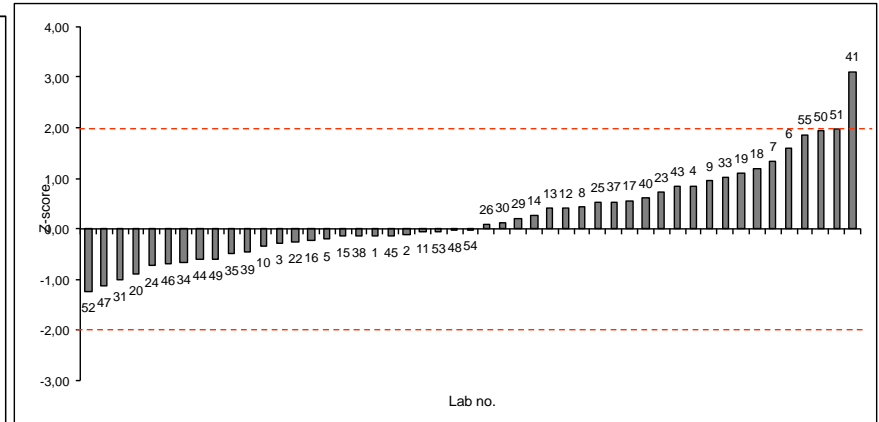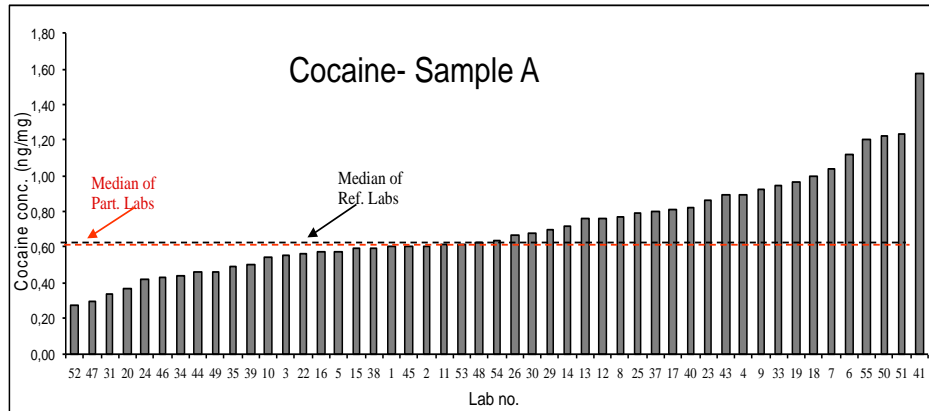
Lab	Cocaine	Z-score	Result
52	0,27	-1,23	Satisfactory
47	0,30	-1,13	Satisfactory
31	0,34	-1,00	Satisfactory
20	0,37	-0,90	Satisfactory
24	0,42	-0,73	Satisfactory
46	0,43	-0,70	Satisfactory
34	0,44	-0,67	Satisfactory
44	0,46	-0,60	Satisfactory
49	0,46	-0,60	Satisfactory
35	0,49	-0,50	Satisfactory
39	0,50	-0,47	Satisfactory
10	0,54	-0,33	Satisfactory
3	0,56	-0,28	Satisfactory
22	0,56	-0,27	Satisfactory
16	0,57	-0,23	Satisfactory
5	0,58	-0,21	Satisfactory
15	0,60	-0,15	Satisfactory
38	0,60	-0,14	Satisfactory
1	0,60	-0,13	Satisfactory
45	0,60	-0,13	Satisfactory
2	0,61	-0,10	Satisfactory
11	0,62	-0,07	Satisfactory
53	0,62	-0,07	Satisfactory
48	0,63	-0,03	Satisfactory
54	0,64	0,00	Satisfactory
26	0,67	0,10	Satisfactory

Lab.	Cocaine (ng/mg)	Z-score	Result
30	0,68	0,13	Satisfactory
29	0,70	0,20	Satisfactory
14	0,72	0,27	Satisfactory
13	0,76	0,40	Satisfactory
12	0,76	0,40	Satisfactory
8	0,77	0,43	Satisfactory
25	0,79	0,51	Satisfactory
37	0,80	0,53	Satisfactory
17	0,81	0,57	Satisfactory
40	0,82	0,60	Satisfactory
23	0,86	0,73	Satisfactory
43	0,89	0,83	Satisfactory
4	0,90	0,85	Satisfactory
9	0,93	0,95	Satisfactory
33	0,95	1,02	Satisfactory
19	0,97	1,09	Satisfactory
18	1,00	1,20	Satisfactory
7	1,04	1,33	Satisfactory
6	1,12	1,60	Satisfactory
55	1,20	1,87	Satisfactory
50	1,22	1,93	Satisfactory
51	1,23	1,97	Satisfactory
41	1,57	3,10	Unsatisfactory
56	N		

Average	0,71
SD	0,27
CV%	37,17
Median	0,64
Minimum	0,27
Quartile 25	0,56
Quartile 75	0,86
Maximum	1,57
Iqr	0,30

BE- Sample A
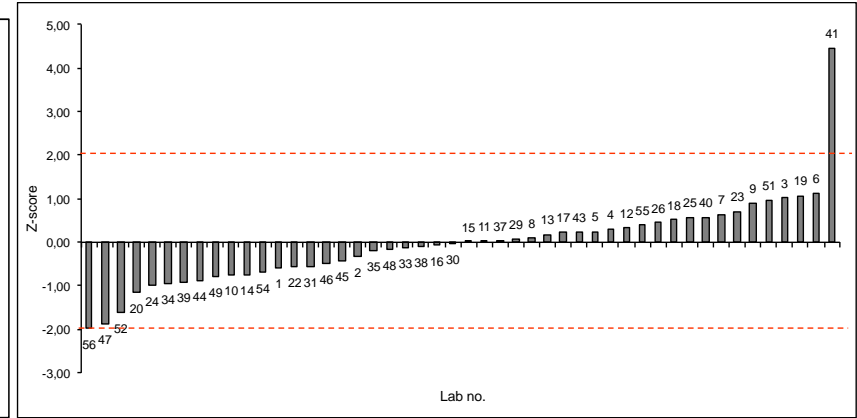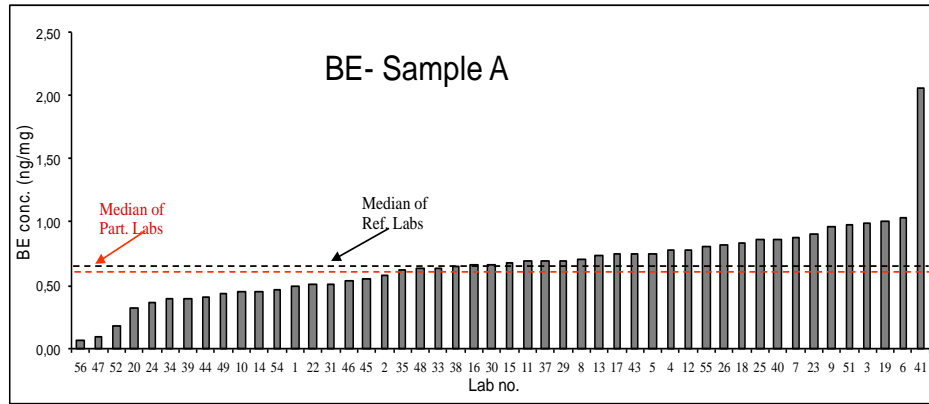
Lab	BE	Z-score	Result
56	0,07	-1,97	Satisfactory
47	0,10	-1,87	Satisfactory
52	0,18	-1,61	Satisfactory
20	0,32	-1,16	Satisfactory
24	0,37	-1,00	Satisfactory
34	0,39	-0,94	Satisfactory
39	0,40	-0,90	Satisfactory
44	0,41	-0,87	Satisfactory
49	0,44	-0,77	Satisfactory
10	0,45	-0,74	Satisfactory
14	0,45	-0,74	Satisfactory
54	0,47	-0,68	Satisfactory
1	0,50	-0,58	Satisfactory
22	0,51	-0,56	Satisfactory
31	0,51	-0,55	Satisfactory
46	0,53	-0,48	Satisfactory
45	0,55	-0,42	Satisfactory
2	0,58	-0,32	Satisfactory
35	0,62	-0,19	Satisfactory
48	0,63	-0,16	Satisfactory
33	0,64	-0,12	Satisfactory
38	0,65	-0,10	Satisfactory
16	0,66	-0,06	Satisfactory
30	0,67	-0,03	Satisfactory
15	0,68	0,01	Satisfactory
11	0,69	0,03	Satisfactory

Lab.	BE (ng/mg)	Z-score	Result
37	0,69	0,03	Satisfactory
29	0,70	0,06	Satisfactory
8	0,71	0,10	Satisfactory
13	0,74	0,18	Satisfactory
17	0,75	0,23	Satisfactory
43	0,75	0,23	Satisfactory
5	0,76	0,25	Satisfactory
4	0,77	0,30	Satisfactory
12	0,78	0,32	Satisfactory
55	0,80	0,39	Satisfactory
26	0,82	0,45	Satisfactory
18	0,84	0,52	Satisfactory
25	0,86	0,58	Satisfactory
40	0,86	0,58	Satisfactory
7	0,88	0,65	Satisfactory
23	0,90	0,71	Satisfactory
9	0,96	0,90	Satisfactory
51	0,98	0,97	Satisfactory
3	0,99	1,01	Satisfactory
19	1,01	1,07	Satisfactory
6	1,03	1,13	Satisfactory
41	2,06	4,45	Unsatisfactory
53	N		

Average	0,67
SD	0,30
CV%	45,40
Median	0,68
Minimum	0,07
Quartile 25	0,49
Quartile 75	0,81
Maximum	2,06
Iqr	0,31
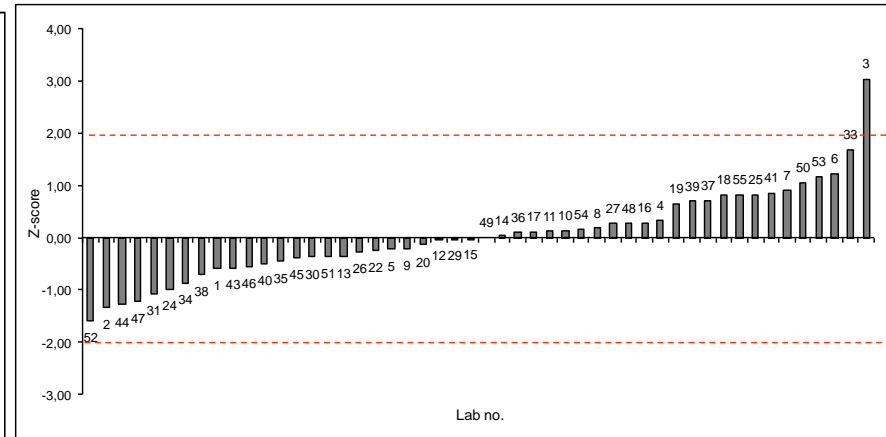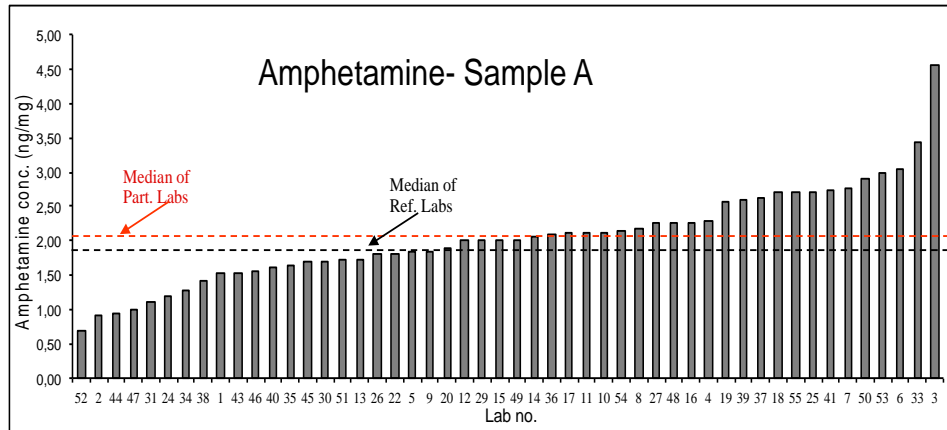
Lab	Amphetamine (ng/mg)	Z-score	Result
52	0,69	-1,58	Satisfactory
2	0,90	-1,33	Satisfactory
44	0,94	-1,29	Satisfactory
47	1,00	-1,21	Satisfactory
31	1,12	-1,07	Satisfactory
24	1,20	-0,98	Satisfactory
34	1,29	-0,87	Satisfactory
38	1,42	-0,71	Satisfactory
1	1,52	-0,60	Satisfactory
43	1,54	-0,58	Satisfactory
46	1,56	-0,55	Satisfactory
40	1,60	-0,50	Satisfactory
35	1,64	-0,45	Satisfactory
45	1,70	-0,38	Satisfactory
30	1,71	-0,37	Satisfactory
51	1,72	-0,36	Satisfactory
13	1,72	-0,35	Satisfactory
26	1,80	-0,26	Satisfactory
22	1,81	-0,25	Satisfactory
5	1,83	-0,23	Satisfactory
9	1,84	-0,21	Satisfactory
20	1,90	-0,14	Satisfactory
12	2,00	-0,02	Satisfactory
29	2,00	-0,02	Satisfactory
15	2,02	0,00	Satisfactory
8	8,56	0,35	Satisfactory

Lab.	Amphetamine (ng/mg)	Z-score	Result
14	2,05	0,04	Satisfactory
36	2,10	0,10	Satisfactory
17	2,11	0,11	Satisfactory
11	2,12	0,12	Satisfactory
10	2,13	0,13	Satisfactory
54	2,14	0,15	Satisfactory
8	2,17	0,18	Satisfactory
27	2,25	0,27	Satisfactory
48	2,25	0,27	Satisfactory
16	2,26	0,29	Satisfactory
4	2,29	0,32	Satisfactory
19	2,57	0,65	Satisfactory
39	2,60	0,69	Satisfactory
37	2,61	0,70	Satisfactory
18	2,70	0,81	Satisfactory
55	2,70	0,81	Satisfactory
25	2,72	0,83	Satisfactory
41	2,74	0,86	Satisfactory
7	2,77	0,89	Satisfactory
50	2,90	1,05	Satisfactory
53	3,00	1,17	Satisfactory
6	3,05	1,23	Satisfactory
33	3,43	1,68	Satisfactory
3	4,57	3,03	Unsatisfactory
56	N		

Average	2,05
SD	0,70
CV%	33,84
Median	2,02
Minimum	0,69
Quartile 25	1,66
Quartile 75	2,50
Maximum	4,57
Iqr	0,84
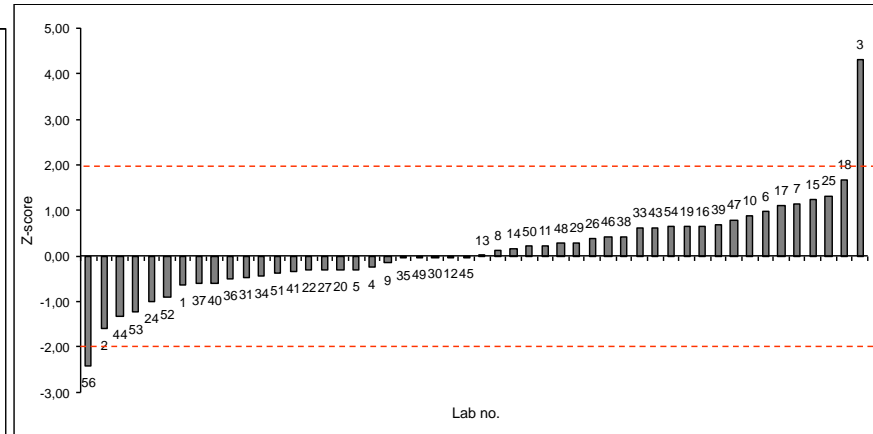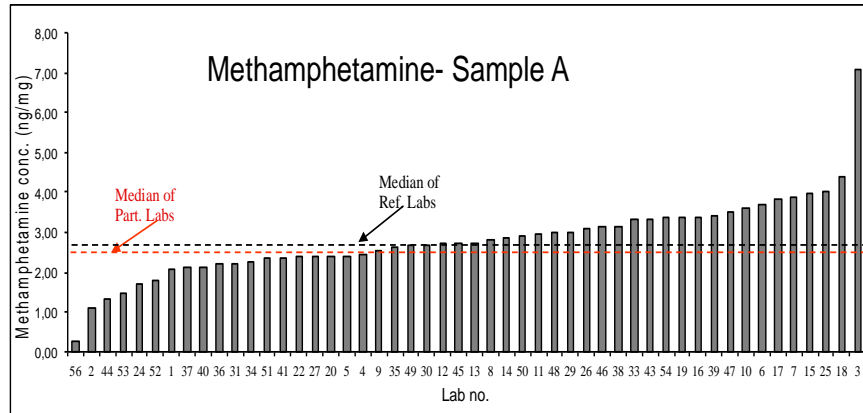
Lab	Methamphetamine (ng/mg)	Z-score	Result
56	0,27	-2,41	Unsatisfactory
2	1,10	-1,59	Satisfactory
44	1,35	-1,35	Satisfactory
53	1,45	-1,25	Satisfactory
24	1,70	-1,00	Satisfactory
52	1,80	-0,90	Satisfactory
1	2,05	-0,65	Satisfactory
37	2,10	-0,60	Satisfactory
40	2,10	-0,60	Satisfactory
36	2,20	-0,50	Satisfactory
31	2,23	-0,48	Satisfactory
34	2,25	-0,46	Satisfactory
51	2,33	-0,38	Satisfactory
41	2,37	-0,34	Satisfactory
22	2,38	-0,33	Satisfactory
27	2,39	-0,32	Satisfactory
20	2,40	-0,31	Satisfactory
5	2,41	-0,30	Satisfactory
4	2,46	-0,25	Satisfactory
9	2,55	-0,16	Satisfactory
35	2,65	-0,06	Satisfactory
49	2,68	-0,03	Satisfactory
30	2,69	-0,02	Satisfactory
12	2,70	-0,01	Satisfactory
45	2,70	-0,01	Satisfactory
13	2,72	0,01	Satisfactory

Lab.	Methamphetamine (ng/mg)	Z-score	Result
8	2,82	0,11	Satisfactory
14	2,86	0,15	Satisfactory
50	2,92	0,21	Satisfactory
11	2,93	0,22	Satisfactory
48	2,98	0,27	Satisfactory
29	3,00	0,29	Satisfactory
26	3,10	0,39	Satisfactory
46	3,13	0,42	Satisfactory
38	3,13	0,42	Satisfactory
33	3,33	0,61	Satisfactory
43	3,34	0,62	Satisfactory
54	3,35	0,63	Satisfactory
19	3,37	0,65	Satisfactory
16	3,37	0,65	Satisfactory
39	3,40	0,68	Satisfactory
47	3,50	0,78	Satisfactory
10	3,60	0,88	Satisfactory
6	3,68	0,96	Satisfactory
17	3,82	1,10	Satisfactory
7	3,86	1,14	Satisfactory
15	3,96	1,24	Satisfactory
25	4,04	1,31	Satisfactory
18	4,40	1,67	Satisfactory
3	7,06	4,31	Unsatisfactory

Average	2,82
SD	0,99
CV%	35,18
Median	2,71
Minimum	0,27
Quartile 25	2,34
Quartile 75	3,35
Maximum	7,06
Iqr	1,01
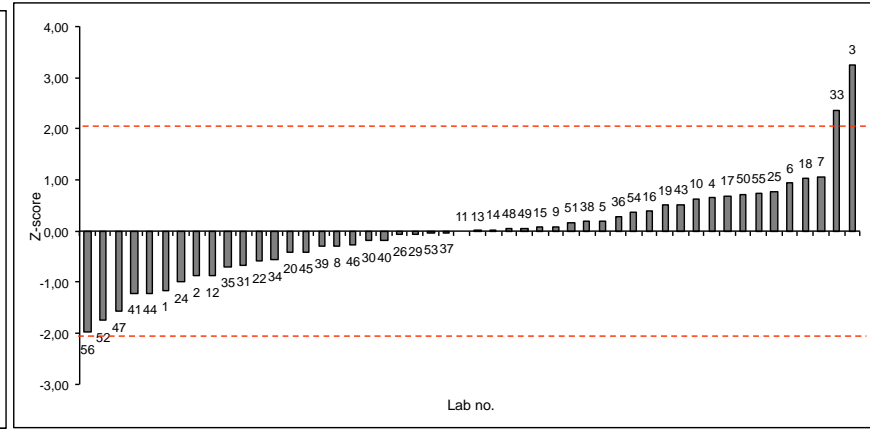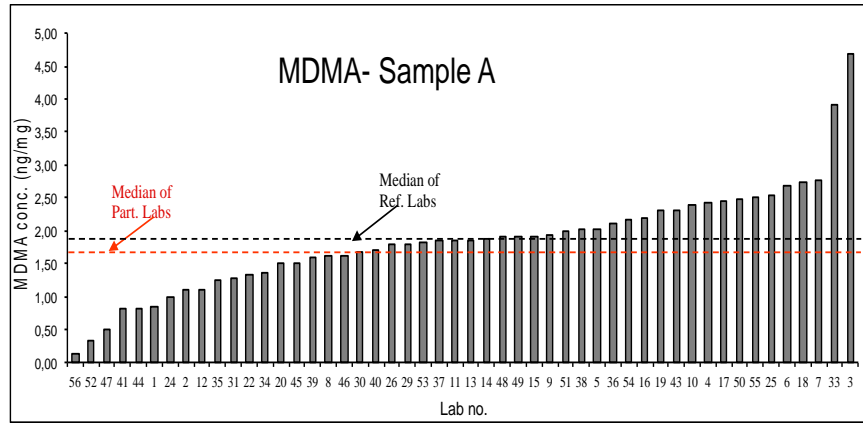
Lab	MDMA (ng/mg)	Z-score	Result
56	0,14	-1,98	Satisfactory
52	0,34	-1,75	Satisfactory
47	0,50	-1,56	Satisfactory
41	0,81	-1,21	Satisfactory
44	0,81	-1,21	Satisfactory
1	0,86	-1,15	Satisfactory
24	1,00	-0,99	Satisfactory
2	1,10	-0,87	Satisfactory
12	1,10	-0,87	Satisfactory
35	1,26	-0,69	Satisfactory
31	1,28	-0,67	Satisfactory
22	1,34	-0,60	Satisfactory
34	1,37	-0,56	Satisfactory
20	1,50	-0,41	Satisfactory
45	1,50	-0,41	Satisfactory
39	1,60	-0,30	Satisfactory
8	1,61	-0,29	Satisfactory
46	1,62	-0,28	Satisfactory
30	1,69	-0,20	Satisfactory
40	1,70	-0,18	Satisfactory
26	1,80	-0,07	Satisfactory
29	1,80	-0,07	Satisfactory
53	1,83	-0,03	Satisfactory
37	1,85	-0,01	Satisfactory
11	1,86	0,00	Satisfactory
13	1,86	0,00	Satisfactory

Lab.	MDMA (ng/mg)	Z-score	Result
14	1,88	0,02	Satisfactory
48	1,90	0,05	Satisfactory
49	1,91	0,06	Satisfactory
15	1,92	0,07	Satisfactory
9	1,93	0,08	Satisfactory
51	2,00	0,16	Satisfactory
38	2,02	0,18	Satisfactory
5	2,02	0,18	Satisfactory
36	2,10	0,28	Satisfactory
54	2,18	0,37	Satisfactory
16	2,20	0,39	Satisfactory
19	2,30	0,51	Satisfactory
43	2,31	0,52	Satisfactory
10	2,41	0,63	Satisfactory
4	2,42	0,65	Satisfactory
17	2,46	0,69	Satisfactory
50	2,49	0,72	Satisfactory
55	2,50	0,74	Satisfactory
25	2,53	0,77	Satisfactory
6	2,67	0,93	Satisfactory
18	2,75	1,02	Satisfactory
7	2,78	1,06	Satisfactory
33	3,92	2,37	Questionable
3	4,68	3,24	Unsatisfactory
27	N		

Average	1,85
SD	0,79
CV%	42,90
Median	1,86
Minimum	0,14
Quartile 25	1,40
Quartile 75	2,28
Maximum	4,68
Iqr	0,87
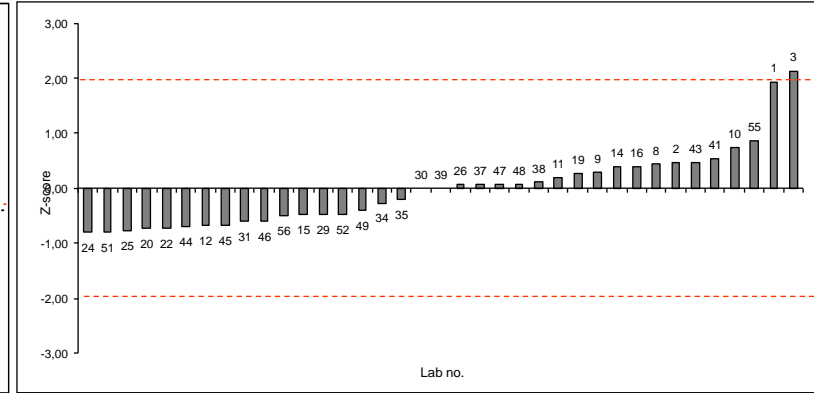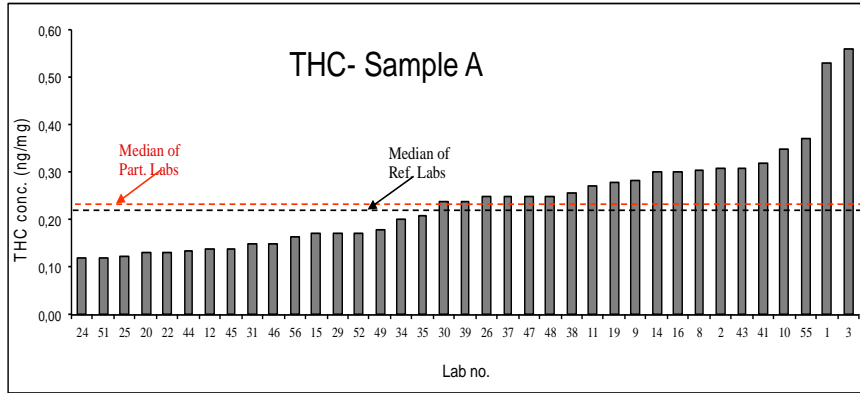
Lab	THC (ng/mg)	Z-score	Result
24	0,12	-0,80	Satisfactory
51	0,12	-0,80	Satisfactory
25	0,13	-0,77	Satisfactory
20	0,13	-0,73	Satisfactory
22	0,13	-0,73	Satisfactory
44	0,14	-0,69	Satisfactory
12	0,14	-0,67	Satisfactory
45	0,14	-0,67	Satisfactory
31	0,15	-0,60	Satisfactory
46	0,15	-0,60	Satisfactory
56	0,17	-0,49	Satisfactory
15	0,17	-0,47	Satisfactory
29	0,17	-0,47	Satisfactory
52	0,17	-0,47	Satisfactory
49	0,18	-0,40	Satisfactory
34	0,20	-0,27	Satisfactory
35	0,21	-0,20	Satisfactory
30	0,24	0,00	Satisfactory
39	0,24	0,00	Satisfactory
26	0,25	0,07	Satisfactory
37	0,25	0,07	Satisfactory
47	0,25	0,07	Satisfactory
48	0,25	0,07	Satisfactory
38	0,26	0,11	Satisfactory
11	0,27	0,20	Satisfactory
1	0,14	0,90	Satisfactory

Lab.	THC (ng/mg)	Z-score	Result
9	0,28	0,29	Satisfactory
14	0,30	0,40	Satisfactory
16	0,30	0,40	Satisfactory
8	0,31	0,44	Satisfactory
2	0,31	0,47	Satisfactory
43	0,31	0,47	Satisfactory
41	0,32	0,53	Satisfactory
10	0,35	0,73	Satisfactory
55	0,37	0,87	Satisfactory
1	0,53	1,93	Satisfactory
3	0,56	2,13	Questionable

Average	0,24
SD	0,10
CV%	42,86
Median	0,24
Minimum	0,12
Quartile 25	0,15
Quartile 75	0,30
Maximum	0,56
Iqr	0,15
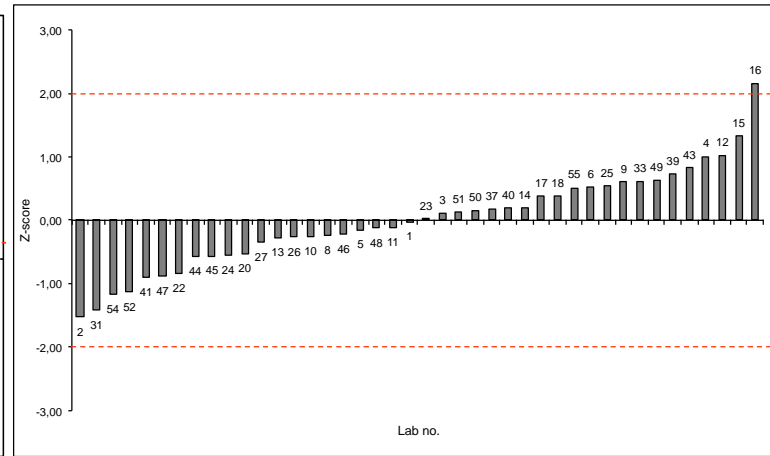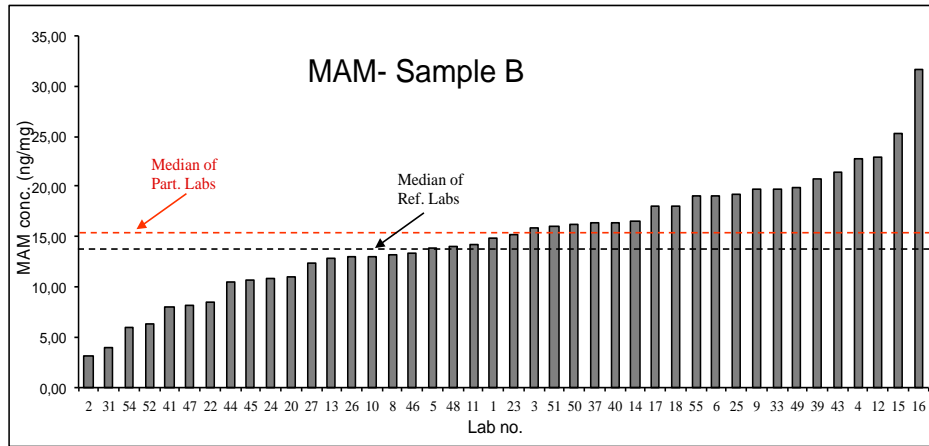
Lab.	MAM (ng/mg)	Z-score	Result
2	3,20	-1,53	Satisfactory
31	4,04	-1,42	Satisfactory
54	6,05	-1,16	Satisfactory
52	6,29	-1,13	Satisfactory
41	8,01	-0,90	Satisfactory
47	8,20	-0,88	Satisfactory
22	8,52	-0,84	Satisfactory
44	10,60	-0,57	Satisfactory
45	10,70	-0,56	Satisfactory
24	10,80	-0,54	Satisfactory
20	11,00	-0,52	Satisfactory
27	12,31	-0,35	Satisfactory
13	12,90	-0,27	Satisfactory
26	13,00	-0,26	Satisfactory
10	13,10	-0,25	Satisfactory
8	13,20	-0,23	Satisfactory
46	13,36	-0,21	Satisfactory
5	13,90	-0,14	Satisfactory
48	14,12	-0,12	Satisfactory
11	14,20	-0,11	Satisfactory
1	14,86	-0,02	Satisfactory
23	15,17	0,02	Satisfactory
3	15,87	0,11	Satisfactory
51	16,00	0,13	Satisfactory
50	16,20	0,15	Satisfactory
37	16,42	0,18	Satisfactory

Lab.	MAM (ng/mg)	Z-score	Result
40	16,47	0,19	Satisfactory
14	16,50	0,19	Satisfactory
17	18,00	0,38	Satisfactory
18	18,00	0,38	Satisfactory
55	19,00	0,51	Satisfactory
6	19,10	0,53	Satisfactory
25	19,19	0,54	Satisfactory
9	19,70	0,60	Satisfactory
33	19,80	0,62	Satisfactory
49	19,88	0,63	Satisfactory
39	20,70	0,73	Satisfactory
43	21,43	0,83	Satisfactory
4	22,82	1,01	Satisfactory
12	23,00	1,03	Satisfactory
15	25,27	1,32	Satisfactory
16	31,70	2,15	Questionable
34	>10		
35	>10		
38	>2		
7	>3		
30	>4		
19	>5		
29	>5		
53	N		

Average	15,06
SD	5,74
CV%	38,08
Median	15,02
Minimum	3,20
Quartile 25	11,33
Quartile 75	19,08
Maximum	31,70
Iqr	7,75

Morphine- Sample B
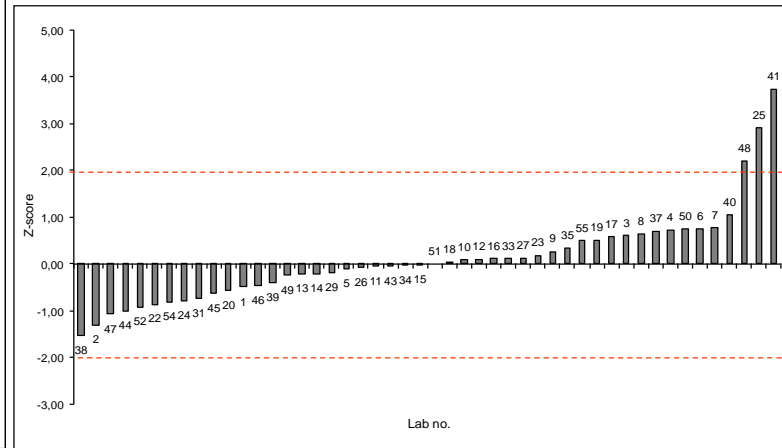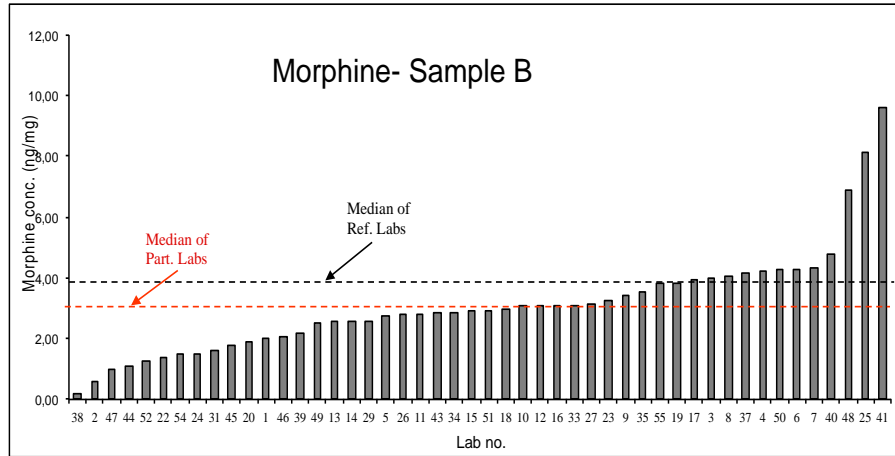
Lab.	Morphine (ng/mg)	Z-score	Result
38	0,19	-1,52	Satisfactory
2	0,60	-1,30	Satisfactory
47	1,00	-1,07	Satisfactory
44	1,12	-1,01	Satisfactory
52	1,29	-0,91	Satisfactory
22	1,39	-0,85	Satisfactory
54	1,48	-0,80	Satisfactory
24	1,50	-0,79	Satisfactory
31	1,60	-0,74	Satisfactory
45	1,80	-0,63	Satisfactory
20	1,90	-0,57	Satisfactory
1	2,03	-0,50	Satisfactory
46	2,09	-0,46	Satisfactory
39	2,20	-0,40	Satisfactory
49	2,49	-0,24	Satisfactory
13	2,55	-0,21	Satisfactory
14	2,56	-0,20	Satisfactory
29	2,60	-0,18	Satisfactory
5	2,76	-0,09	Satisfactory
26	2,80	-0,07	Satisfactory
11	2,82	-0,06	Satisfactory
43	2,84	-0,04	Satisfactory
34	2,88	-0,02	Satisfactory
15	2,91	0,00	Satisfactory
51	2,92	0,00	Satisfactory
18	3,00	0,04	Satisfactory

Lab.	Morphine (ng/mg)	Z-score	Result
10	3,09	0,09	Satisfactory
12	3,10	0,10	Satisfactory
16	3,11	0,11	Satisfactory
33	3,11	0,11	Satisfactory
27	3,13	0,12	Satisfactory
23	3,24	0,18	Satisfactory
9	3,40	0,27	Satisfactory
35	3,52	0,34	Satisfactory
55	3,80	0,49	Satisfactory
19	3,83	0,51	Satisfactory
17	3,95	0,58	Satisfactory
3	3,99	0,60	Satisfactory
8	4,07	0,64	Satisfactory
37	4,18	0,70	Satisfactory
4	4,22	0,73	Satisfactory
50	4,25	0,74	Satisfactory
6	4,27	0,75	Satisfactory
7	4,31	0,78	Satisfactory
40	4,80	1,05	Satisfactory
48	6,87	2,21	Questionable
25	8,12	2,90	Questionable
41	9,61	3,74	Unsatisfactory
30	P		
53	N		
56	N		

Average	3,11
SD	1,70
CV%	54,80
Median	2,92
Minimum	0,19
Quartile 25	2,08
Quartile 75	3,86
Maximum	9,61
Iqr	1,79
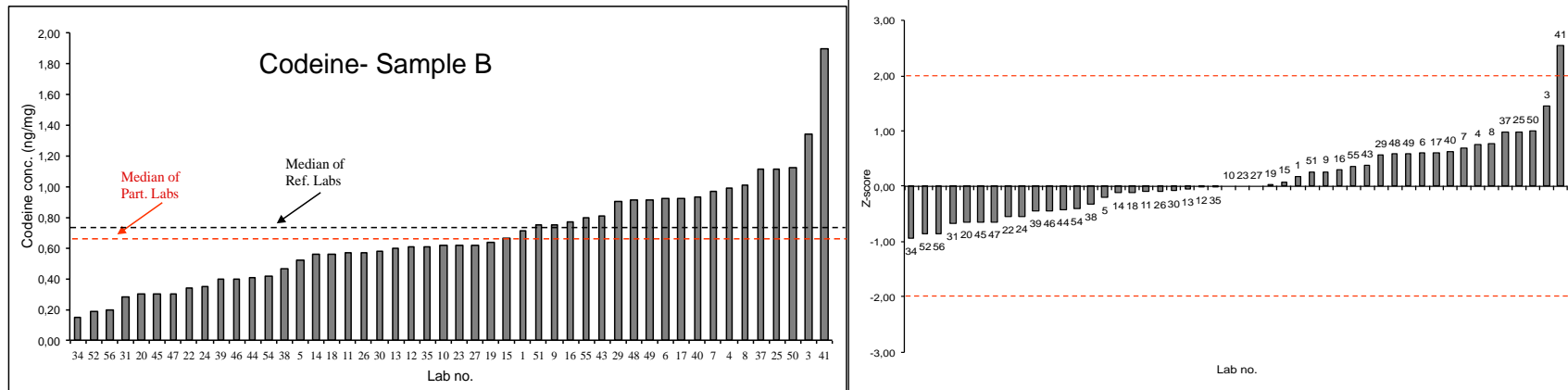
Lab	Codeine (ng/mg)	Z-score	Result
34	0,15	-0,94	Satisfactory
52	0,19	-0,86	Satisfactory
56	0,20	-0,85	Satisfactory
31	0,28	-0,68	Satisfactory
20	0,30	-0,64	Satisfactory
45	0,30	-0,64	Satisfactory
47	0,30	-0,64	Satisfactory
22	0,34	-0,55	Satisfactory
24	0,35	-0,54	Satisfactory
39	0,40	-0,44	Satisfactory
46	0,40	-0,44	Satisfactory
44	0,41	-0,42	Satisfactory
54	0,42	-0,41	Satisfactory
38	0,46	-0,32	Satisfactory
5	0,52	-0,20	Satisfactory
14	0,56	-0,12	Satisfactory
18	0,56	-0,12	Satisfactory
11	0,57	-0,10	Satisfactory
26	0,57	-0,10	Satisfactory
30	0,58	-0,08	Satisfactory
13	0,59	-0,05	Satisfactory
12	0,61	-0,02	Satisfactory
35	0,61	-0,02	Satisfactory
10	0,62	0,00	Satisfactory
23	0,62	0,00	Satisfactory
27	0,62	0,00	Satisfactory

Lab.	Codeine (ng/mg)	Z-score	Result
19	0,63	0,03	Satisfactory
15	0,66	0,08	Satisfactory
1	0,71	0,18	Satisfactory
51	0,75	0,26	Satisfactory
9	0,75	0,27	Satisfactory
16	0,77	0,30	Satisfactory
55	0,80	0,36	Satisfactory
43	0,81	0,38	Satisfactory
29	0,90	0,56	Satisfactory
48	0,91	0,58	Satisfactory
49	0,91	0,58	Satisfactory
6	0,92	0,60	Satisfactory
17	0,92	0,60	Satisfactory
40	0,93	0,62	Satisfactory
7	0,97	0,70	Satisfactory
4	0,99	0,74	Satisfactory
8	1,01	0,78	Satisfactory
37	1,11	0,98	Satisfactory
25	1,11	0,99	Satisfactory
50	1,12	1,00	Satisfactory
3	1,34	1,45	Satisfactory
41	1,89	2,54	Questionable
2	N		
53	N		

Average	0,68
SD	0,33
CV%	48,58
Median	0,62
Minimum	0,15
Quartile 25	0,41
Quartile 75	0,91
Maximum	1,89
Iqr	0,50
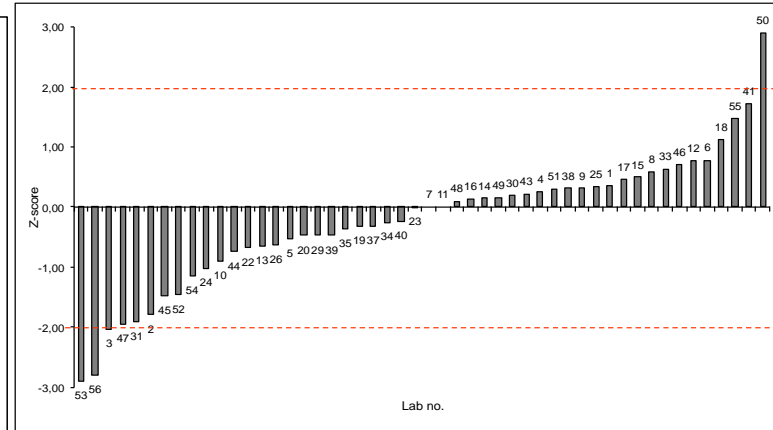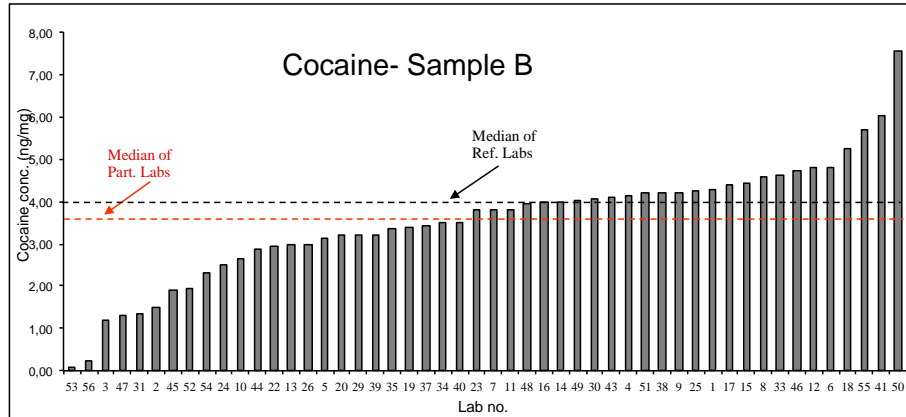
Lab	Cocaine (ng/mg)	Z-score	Result
53	0,08	-2,89	Questionable
56	0,21	-2,79	Questionable
3	1,20	-2,02	Questionable
47	1,30	-1,95	Satisfactory
31	1,34	-1,91	Satisfactory
2	1,50	-1,79	Satisfactory
45	1,90	-1,48	Satisfactory
52	1,93	-1,46	Satisfactory
54	2,33	-1,15	Satisfactory
24	2,50	-1,02	Satisfactory
10	2,66	-0,89	Satisfactory
44	2,86	-0,74	Satisfactory
22	2,94	-0,67	Satisfactory
13	2,97	-0,65	Satisfactory
26	3,00	-0,63	Satisfactory
5	3,13	-0,53	Satisfactory
20	3,20	-0,47	Satisfactory
29	3,20	-0,47	Satisfactory
39	3,20	-0,47	Satisfactory
35	3,34	-0,36	Satisfactory
19	3,40	-0,32	Satisfactory
37	3,41	-0,31	Satisfactory
34	3,49	-0,25	Satisfactory
40	3,50	-0,24	Satisfactory
23	3,80	-0,01	Satisfactory
7	3,81	0,00	Satisfactory

Lab.	Cocaine (ng/mg)	Z-score	Result
11	3,81	0,00	Satisfactory
48	3,94	0,10	Satisfactory
16	3,98	0,13	Satisfactory
14	4,00	0,15	Satisfactory
49	4,01	0,16	Satisfactory
30	4,06	0,19	Satisfactory
43	4,10	0,22	Satisfactory
4	4,14	0,26	Satisfactory
51	4,20	0,30	Satisfactory
38	4,22	0,31	Satisfactory
9	4,22	0,32	Satisfactory
25	4,24	0,33	Satisfactory
1	4,27	0,36	Satisfactory
17	4,40	0,46	Satisfactory
15	4,45	0,50	Satisfactory
8	4,57	0,59	Satisfactory
33	4,63	0,64	Satisfactory
46	4,73	0,71	Satisfactory
12	4,80	0,77	Satisfactory
6	4,82	0,78	Satisfactory
18	5,25	1,12	Satisfactory
55	5,70	1,47	Satisfactory
41	6,03	1,72	Satisfactory
50	7,55	2,90	Questionable

Average	3,53
SD	1,38
CV%	39,26
Median	3,81
Minimum	0,08
Quartile 25	2,95
Quartile 75	4,23
Maximum	7,55
Iqr	1,29

BE- Sample B
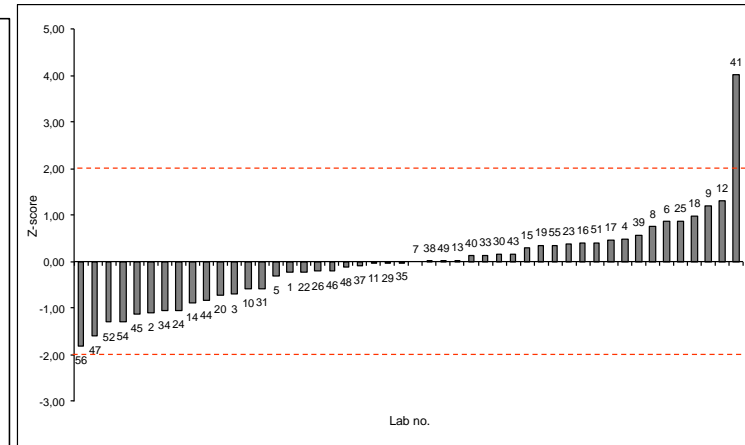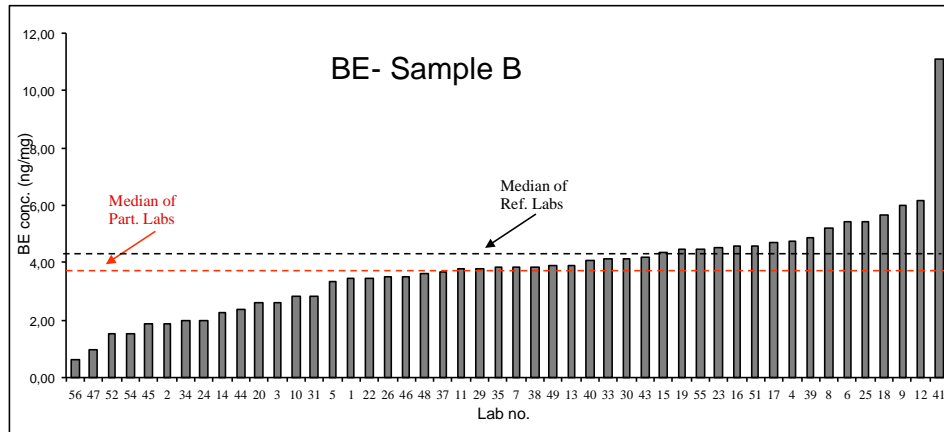
Lab	BE (ng/mg)	Z-score	Result
56	0,62	-1,81	Satisfactory
47	1,00	-1,59	Satisfactory
52	1,53	-1,30	Satisfactory
54	1,55	-1,29	Satisfactory
45	1,86	-1,12	Satisfactory
2	1,90	-1,09	Satisfactory
34	1,99	-1,04	Satisfactory
24	2,00	-1,04	Satisfactory
14	2,30	-0,87	Satisfactory
44	2,36	-0,84	Satisfactory
20	2,60	-0,71	Satisfactory
3	2,61	-0,70	Satisfactory
10	2,82	-0,58	Satisfactory
31	2,85	-0,57	Satisfactory
5	3,32	-0,31	Satisfactory
1	3,46	-0,23	Satisfactory
22	3,46	-0,23	Satisfactory
26	3,50	-0,21	Satisfactory
46	3,51	-0,20	Satisfactory
48	3,65	-0,12	Satisfactory
37	3,71	-0,09	Satisfactory
11	3,80	-0,04	Satisfactory
29	3,80	-0,04	Satisfactory
35	3,86	-0,01	Satisfactory
7	3,87	0,00	Satisfactory
38	3,88	0,01	Satisfactory

Lab.	BE (ng/mg)	Z-score	Result
49	3,91	0,02	Satisfactory
13	3,93	0,03	Satisfactory
40	4,10	0,13	Satisfactory
33	4,13	0,14	Satisfactory
30	4,16	0,16	Satisfactory
43	4,17	0,17	Satisfactory
15	4,39	0,29	Satisfactory
19	4,50	0,35	Satisfactory
55	4,50	0,35	Satisfactory
23	4,56	0,38	Satisfactory
16	4,60	0,41	Satisfactory
51	4,61	0,41	Satisfactory
17	4,72	0,47	Satisfactory
4	4,76	0,49	Satisfactory
39	4,90	0,57	Satisfactory
8	5,22	0,75	Satisfactory
6	5,42	0,86	Satisfactory
25	5,43	0,87	Satisfactory
18	5,65	0,99	Satisfactory
9	6,01	1,19	Satisfactory
12	6,20	1,29	Satisfactory
41	11,09	4,01	Unsatisfactory
53	N		

Average	3,81
SD	1,66
CV%	43,71
Median	3,87
Minimum	0,62
Quartile 25	2,77
Quartile 75	4,57
Maximum	11,09
Iqr	1,80

Amphetamine- Sample B
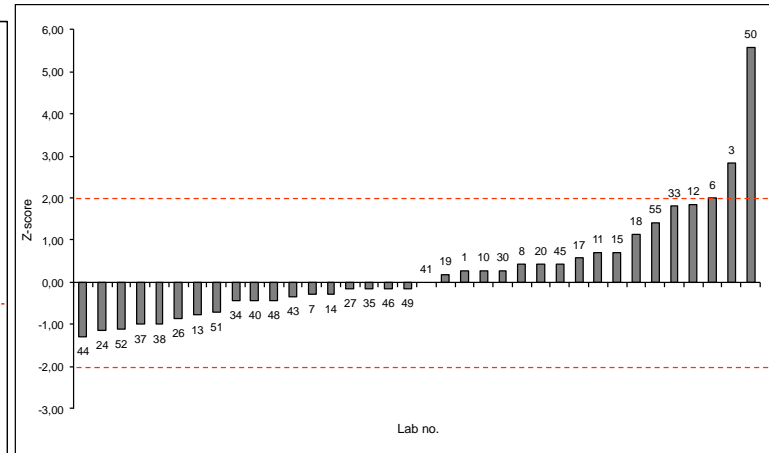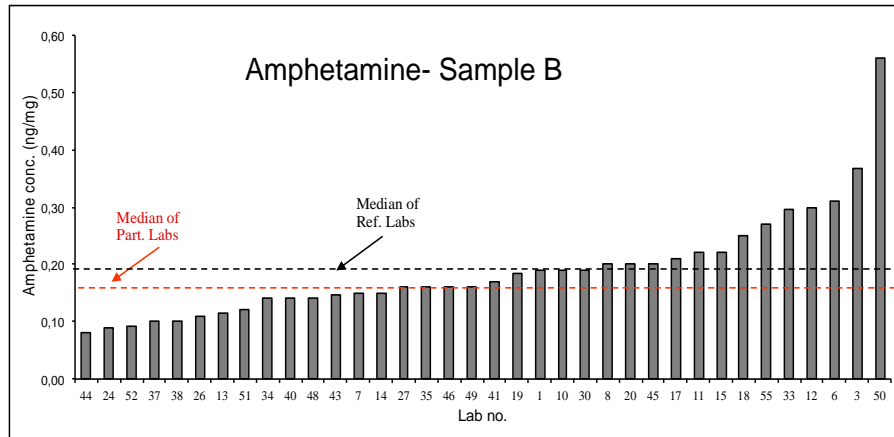
Lab	Amphetamine (ng/mg)	Z-score	Result
44	0,08	-1,29	Satisfactory
24	0,09	-1,14	Satisfactory
52	0,09	-1,11	Satisfactory
37	0,10	-1,00	Satisfactory
38	0,10	-1,00	Satisfactory
26	0,11	-0,86	Satisfactory
13	0,12	-0,77	Satisfactory
51	0,12	-0,71	Satisfactory
34	0,14	-0,43	Satisfactory
40	0,14	-0,43	Satisfactory
48	0,14	-0,43	Satisfactory
43	0,15	-0,33	Satisfactory
7	0,15	-0,29	Satisfactory
14	0,15	-0,29	Satisfactory
27	0,16	-0,14	Satisfactory
35	0,16	-0,14	Satisfactory
46	0,16	-0,14	Satisfactory
49	0,16	-0,14	Satisfactory
41	0,17	0,00	Satisfactory
19	0,18	0,19	Satisfactory
1	0,19	0,29	Satisfactory
10	0,19	0,29	Satisfactory
30	0,19	0,29	Satisfactory
8	0,20	0,43	Satisfactory
20	0,20	0,43	Satisfactory
45	0,20	0,43	Satisfactory

Lab.	Amphetamine (ng/mg)	Z-score	Result
17	0,21	0,57	Satisfactory
11	0,22	0,71	Satisfactory
15	0,22	0,71	Satisfactory
18	0,25	1,14	Satisfactory
55	0,27	1,43	Satisfactory
33	0,30	1,80	Satisfactory
12	0,30	1,86	Satisfactory
6	0,31	1,99	Satisfactory
3	0,37	2,83	Questionable
50	0,56	5,57	Unsatisfactory
22	P		
9	N		
25	N		
2	N		
4	N		
5	N		
16	N		
29	N		
31	N		
36	N		
39	N		
47	N		
53	N		
54	N		
56	N		

|	
Average	0,19
SD	0,09
CV%	48,03
Median	0,17
Minimum	0,08
Quartile 25	0,14
Quartile 75	0,21
Maximum	0,56
Iqr	0,07

The median Amphetamine concentration is below the cut-off proposed by SoHT (0.20 ng/mg)
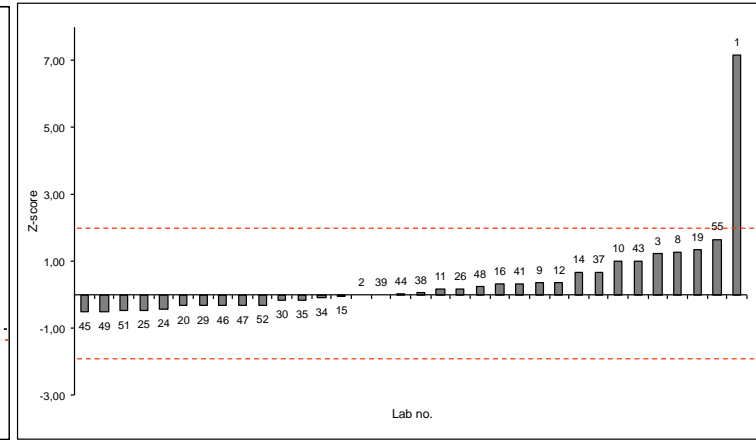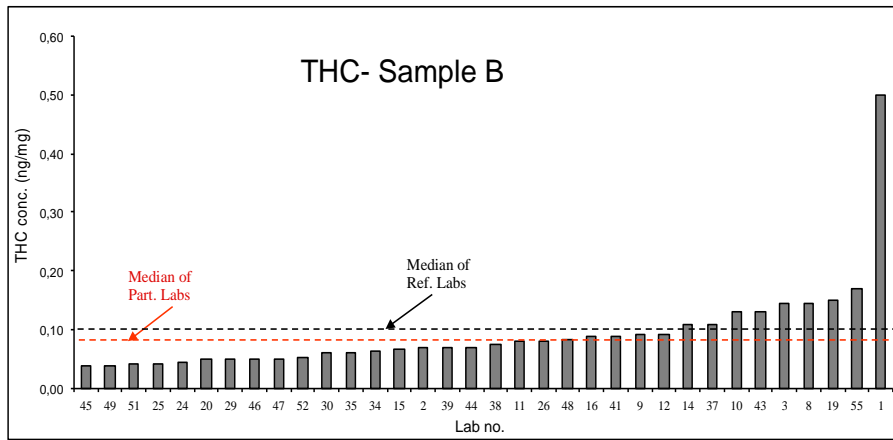
Lab	THC (ng/mg)	Z-score	Result
45	0,04	-0,50	Satisfactory
49	0,04	-0,50	Satisfactory
51	0,04	-0,48	Satisfactory
25	0,04	-0,45	Satisfactory
24	0,05	-0,42	Satisfactory
20	0,05	-0,33	Satisfactory
29	0,05	-0,33	Satisfactory
46	0,05	-0,33	Satisfactory
47	0,05	-0,33	Satisfactory
52	0,05	-0,30	Satisfactory
30	0,06	-0,17	Satisfactory
35	0,06	-0,17	Satisfactory
34	0,07	-0,08	Satisfactory
15	0,07	-0,03	Satisfactory
2	0,07	0,00	Satisfactory
39	0,07	0,00	Satisfactory
44	0,07	0,02	Satisfactory
38	0,07	0,07	Satisfactory
11	0,08	0,17	Satisfactory
26	0,08	0,17	Satisfactory
48	0,09	0,25	Satisfactory
16	0,09	0,33	Satisfactory
41	0,09	0,33	Satisfactory
9	0,09	0,35	Satisfactory
12	0,09	0,37	Satisfactory
14	0,11	0,67	Satisfactory

Lab.	THC (ng/mg)	Z-score	Result
37	0,11	0,67	Satisfactory
10	0,13	1,00	Satisfactory
43	0,13	1,00	Satisfactory
3	0,14	1,23	Satisfactory
8	0,15	1,27	Satisfactory
19	0,15	1,33	Satisfactory
55	0,17	1,67	Satisfactory
1	0,50	7,17	Unsatisfactory
22	P		
31	N		
56	N		

Average	0,09
SD	0,08
CV%	83,91
Median	0,07
Minimum	0,04
Quartile 25	0,05
Quartile 75	0,11
Maximum	0,50
Iqr	0,06
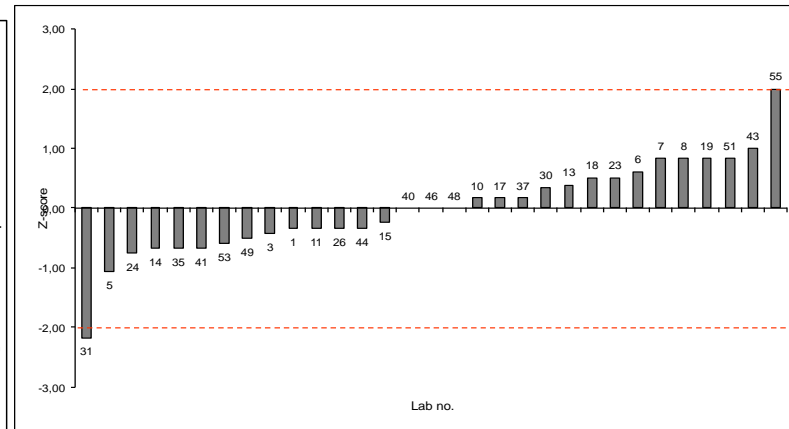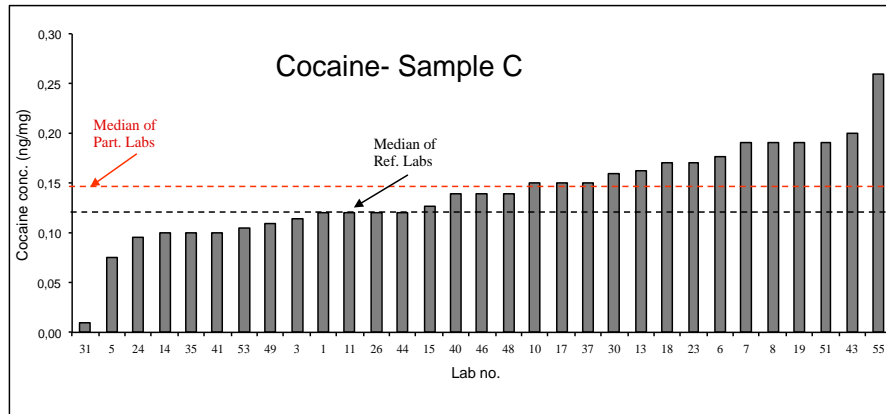
Lab	Cocaine (ng/mg)	Z-score	Result
31	0,01	-2,17	Questionble
5	0,08	-1,07	Satisfactory
24	0,10	-0,75	Satisfactory
14	0,10	-0,67	Satisfactory
35	0,10	-0,67	Satisfactory
41	0,10	-0,67	Satisfactory
53	0,11	-0,58	Satisfactory
49	0,11	-0,50	Satisfactory
3	0,12	-0,42	Satisfactory
1	0,12	-0,33	Satisfactory
11	0,12	-0,33	Satisfactory
26	0,12	-0,33	Satisfactory
44	0,12	-0,33	Satisfactory
15	0,13	-0,23	Satisfactory
40	0,14	0,00	Satisfactory
46	0,14	0,00	Satisfactory
48	0,14	0,00	Satisfactory
10	0,15	0,17	Satisfactory
17	0,15	0,17	Satisfactory
37	0,15	0,17	Satisfactory
30	0,16	0,33	Satisfactory
13	0,16	0,38	Satisfactory
18	0,17	0,50	Satisfactory
23	0,17	0,50	Satisfactory
6	0,18	0,62	Satisfactory
37	1,91	0,21	Satisfactory

Lab.	Cocaine (ng/mg)	Z-score	Result
8	0,19	0,83	Satisfactory
19	0,19	0,83	Satisfactory
51	0,19	0,83	Satisfactory
43	0,20	1,00	Satisfactory
55	0,26	2,00	Satisfactory
22	P		
9	N		
25	N		
2	N		
4	N		
12	N		
16	N		
20	N		
29	N		
33	N		
34	N		
38	N		
39	N		
45	N		
47	N		
50	N		
52	N		
54	N		
56	N		

Average	0,14
SD	0,05
CV%	32,60
Median	0,14
Minimum	0,01
Quartile 25	0,11
Quartile 75	0,17
Maximum	0,26
Iqr	0,06

The median Cocaine concentration is below the cut-off proposed by SoHT (0.20 ng/mg)

BE- Sample C
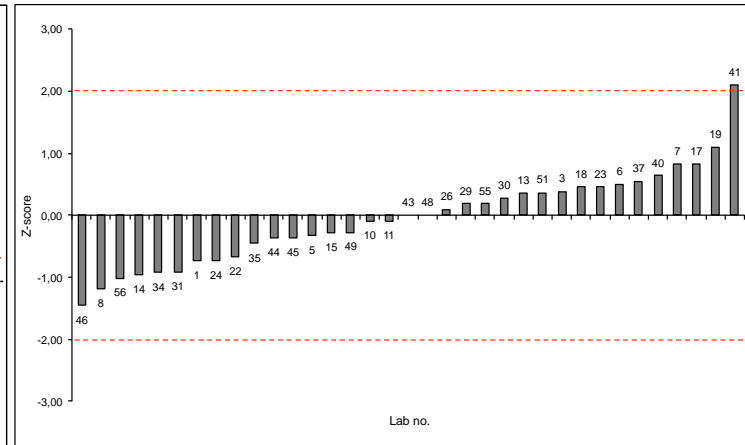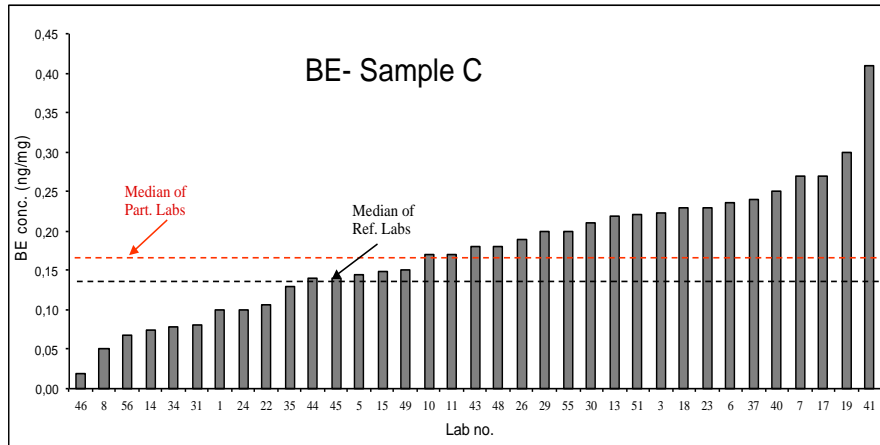
Lab	BE (ng/mg)	Z-score	Result
46	0,02	-1,45	Satisfactory
8	0,05	-1,18	Satisfactory
56	0,07	-1,01	Satisfactory
14	0,08	-0,95	Satisfactory
34	0,08	-0,93	Satisfactory
31	0,08	-0,91	Satisfactory
1	0,10	-0,73	Satisfactory
24	0,10	-0,73	Satisfactory
22	0,11	-0,67	Satisfactory
35	0,13	-0,45	Satisfactory
44	0,14	-0,36	Satisfactory
45	0,14	-0,36	Satisfactory
5	0,14	-0,33	Satisfactory
15	0,15	-0,28	Satisfactory
49	0,15	-0,27	Satisfactory
10	0,17	-0,09	Satisfactory
11	0,17	-0,09	Satisfactory
43	0,18	0,00	Satisfactory
48	0,18	0,00	Satisfactory
26	0,19	0,09	Satisfactory
29	0,20	0,18	Satisfactory
55	0,20	0,18	Satisfactory
30	0,21	0,27	Satisfactory
13	0,22	0,35	Satisfactory
51	0,22	0,36	Satisfactory
3	0,22	0,38	Satisfactory

Lab.	BE (ng/mg)	Z-score	Result
18	0,23	0,45	Satisfactory
23	0,23	0,45	Satisfactory
6	0,24	0,50	Satisfactory
37	0,24	0,55	Satisfactory
40	0,25	0,64	Satisfactory
7	0,27	0,82	Satisfactory
17	0,27	0,82	Satisfactory
19	0,30	1,09	Satisfactory
41	0,41	2,09	Questionable
2	N		
4	N		
12	N		
16	N		
20	N		
33	N		
38	N		
39	N		
47	N		
52	N		
53	N		
54	N		
25	N		

Average	0,18
SD	0,08
CV%	45,24
Median	0,18
Minimum	0,02
Quartile 25	0,12
Quartile 75	0,23
Maximum	0,41
Iqr	0,11