# SOCIETY OF HAIR TESTING

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

Sevilla, August, 2013

**Proficiency Test 2013-1**

Laboratory Code: **«Lab_code»**

Dear participants,

Enclosed you will find the report of the Proficiency Test 2013-1 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 four samples were sent to forty three participating laboratories. Forty one of them sent the report forms back.

Sample contents were as follows:

∗ Sample A was a drug-free hair sample.

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

∗ Sample C contained opiates (6-MAM, morphine and traces of codeine) cocainics (cocaine, BE, and norcocaine), amphetamine compounds (amphetamine, methamphetamine, MDMA and traces of MDA) and cannabis (THC, CBD, CBN and THC-COOH). It also contained tramadol and traces of methadone and diazepam.

∗ Sample D contained synthetic opiates and other pharmaceutical drugs. The report of this sample is attached in a separate document.

## 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

$\chi$: 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: $2 < Z\text{-score} \leq 3$

Unsatisfactory results: Z-score $\geq 3$

## Certificate

A certificate will be mailed to the participants.


Yours faithfully,


Carmen Jurado

# QUALITATIVE RESULTS

Laboratory Code: **Lab**

| Substances | Sample A | | |
|---|---|---|---|
| | A | T | F |
| Drugs | | N | |

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

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

\* The median concentration of MDMA in Sample B is 0.12 ng/mg, which is lower than the cut-off proposed by SoHT (0.2 ng/mg)

\** The median concentration of codeine in Sample C is 0.11 ng/mg, which is lower than the cut-off proposed by SoHT (0.2 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 B contains THC-COOH, methadone, norcocaine, tramadol, acetylcodeine, diazepam, nordiazepam and traces of EDDP and EME.
- Sample C contains THC-COOH, norcocaine, tramadol and traces of methadone, MDA and diazepam.
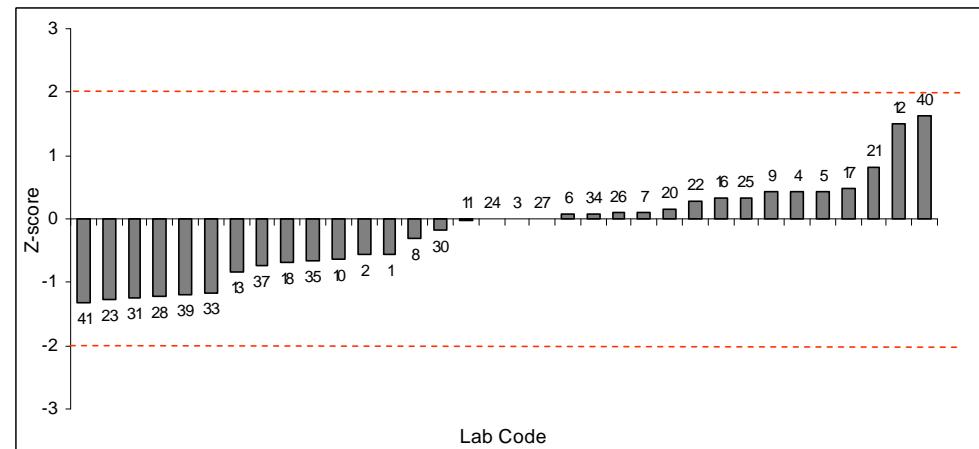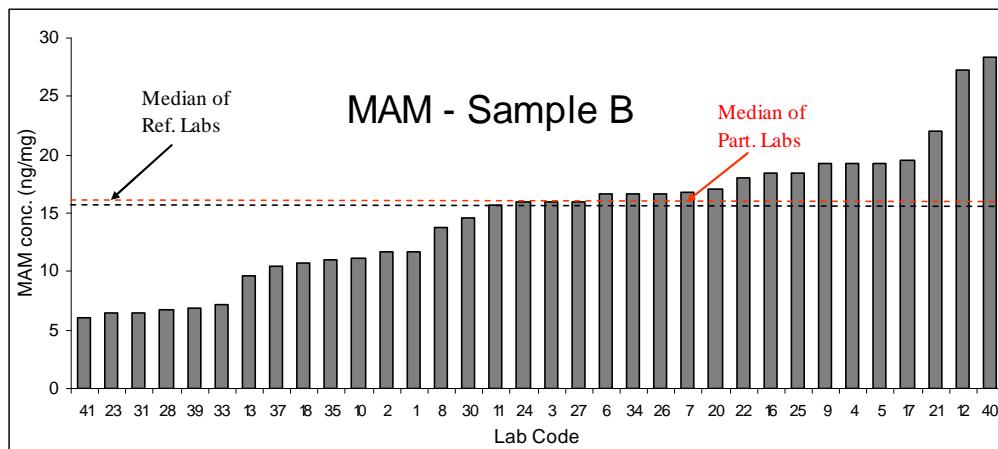
| Lab. | MAM (ng/mg) | Z-score | Result |
|------|-------------|---------|--------|
| 41 | 6,04 | -1,31 | Satisfactory |
| 23 | 6,4 | -1,27 | Satisfactory |
| 31 | 6,5 | -1,25 | Satisfactory |
| 28 | 6,69 | -1,23 | Satisfactory |
| 39 | 6,87 | -1,20 | Satisfactory |
| 33 | 7,21 | -1,16 | Satisfactory |
| 13 | 9,7 | -0,83 | Satisfactory |
| 37 | 10,4 | -0,74 | Satisfactory |
| 18 | 10,78 | -0,69 | Satisfactory |
| 35 | 11,0 | -0,65 | Satisfactory |
| 10 | 11,1 | -0,64 | Satisfactory |
| 2 | 11,7 | -0,56 | Satisfactory |
| 1 | 11,75 | -0,56 | Satisfactory |
| 8 | 13,7 | -0,30 | Satisfactory |
| 30 | 14,64 | -0,17 | Satisfactory |
| 11 | 15,7 | -0,03 | Satisfactory |
| 24 | 15,9 | -0,01 | Satisfactory |
| 3 | 16,0 | 0,01 | Satisfactory |
| 27 | 16,0 | 0,01 | Satisfactory |
| 6 | 16,6 | 0,09 | Satisfactory |
| 34 | 16,62 | 0,09 | Satisfactory |
| 26 | 16,69 | 0,10 | Satisfactory |
| 7 | 16,8 | 0,11 | Satisfactory |
| 20 | 17,04 | 0,14 | Satisfactory |
| 22 | 18,0 | 0,27 | Satisfactory |
| 16 | 18,49 | 0,34 | Satisfactory |

| Lab. | MAM (ng/mg) | Z-score | Result |
|------|-------------|---------|--------|
| 25 | 18,5 | 0,34 | Satisfactory |
| 9 | 19,2 | 0,43 | Satisfactory |
| 4 | 19,3 | 0,44 | Satisfactory |
| 5 | 19,3 | 0,44 | Satisfactory |
| 17 | 19,6 | 0,48 | Satisfactory |
| 21 | 22,0 | 0,80 | Satisfactory |
| 12 | 27,21 | 1,49 | Satisfactory |
| 40 | 28,3 | 1,64 | Satisfactory |
| 29 | >10 | | |
| 15 | >15 | | |
| 36 | >4,69 | | |
| 38 | NA | | |
| 19 | P | | |
| 32 | P | | |
| 14 | NA | | |

| | |
|---|---|
| Average | 14,77 |
| SD | 5,54 |
| CV% | 37,56 |
| Median | 15,95 |
| Minimum | 6,04 |
| Quartile 25 | 10,83 |
| Quartile 75 | 18,37 |
| Maximum | 28,3 |
| Iqr | 7,53 |

Morphine - Sample B
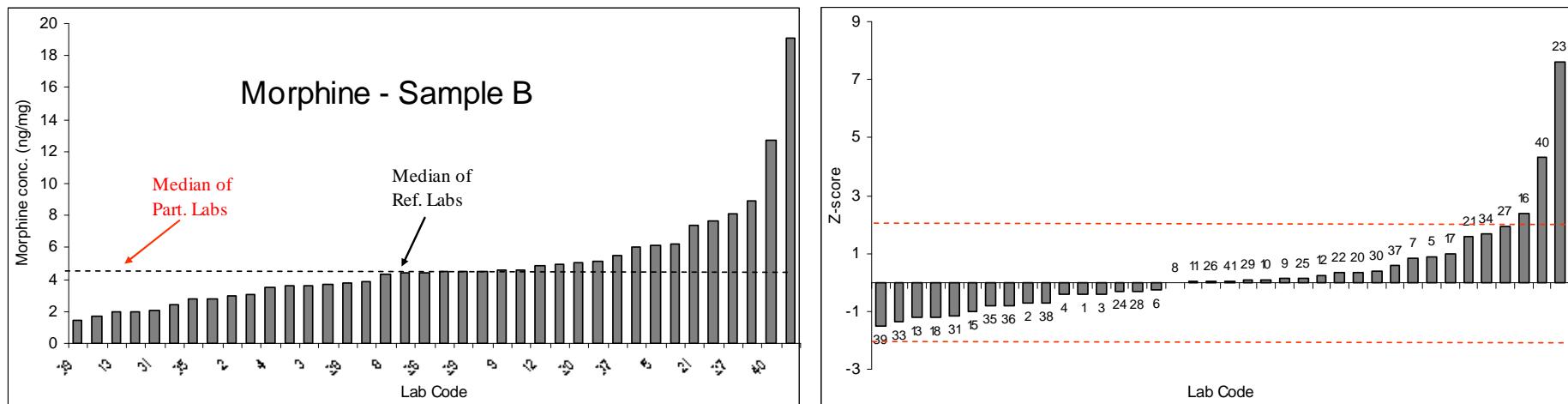


| Lab. | Morphine (ng/mg) | Z-score | Result |
|---|---|---|---|
| 39 | 1,46 | -1,49 | Satisfactory |
| 33 | 1,74 | -1,349 | Satisfactory |
| 13 | 2,0 | -1,21 | Satisfactory |
| 18 | 2,01 | -1,20 | Satisfactory |
| 31 | 2,1 | -1,16 | Satisfactory |
| 15 | 2,4 | -1,00 | Satisfactory |
| 35 | 2,8 | -0,79 | Satisfactory |
| 36 | 2,82 | -0,78 | Satisfactory |
| 2 | 3,01 | -0,69 | Satisfactory |
| 38 | 3,02 | -0,68 | Satisfactory |
| 4 | 3,52 | -0,43 | Satisfactory |
| 1 | 3,6 | -0,39 | Satisfactory |
| 3 | 3,6 | -0,39 | Satisfactory |
| 24 | 3,72 | -0,32 | Satisfactory |
| 28 | 3,77 | -0,30 | Satisfactory |
| 6 | 3,89 | -0,24 | Satisfactory |
| 8 | 4,3 | -0,02 | Satisfactory |
| 11 | 4,4 | 0,02 | Satisfactory |
| 26 | 4,41 | 0,03 | Satisfactory |
| 41 | 4,46 | 0,06 | Satisfactory |
| 29 | 4,48 | 0,07 | Satisfactory |
| 10 | 4,5 | 0,07 | Satisfactory |
| 9 | 4,57 | 0,11 | Satisfactory |
| 25 | 4,63 | 0,14 | Satisfactory |
| 12 | 4,82 | 0,24 | Satisfactory |
| 22 | 5,0 | 0,33 | Satisfactory |

| Lab. | Morphine (ng/mg) | Z-score | Result |
|---|---|---|---|
| 20 | 5,03 | 0,35 | Satisfactory |
| 30 | 5,1 | 0,38 | Satisfactory |
| 37 | 5,5 | 0,59 | Satisfactory |
| 7 | 6,0 | 0,85 | Satisfactory |
| 5 | 6,11 | 0,91 | Satisfactory |
| 17 | 6,24 | 0,97 | Satisfactory |
| 21 | 7,4 | 1,57 | Satisfactory |
| 34 | 7,66 | 1,70 | Satisfactory |
| 27 | 8,1 | 1,93 | Satisfactory |
| 16 | 8,96 | 2,37 | Questionable |
| 40 | 12,7 | 4,30 | Unsatisfactory |
| 23 | 19,1 | 7,59 | Unsatisfactory |
| 19 | P | | |
| 32 | P | | |
| 14 | NA | | |

| | |
|---|---|
| Average | 4,97 |
| SD | 3,19 |
| CV% | 64,17 |
| Median | 4,43 |
| Minimum | 1,46 |
| Quartile 25 | 3,14 |
| Quartile 75 | 5,4 |
| Maximum | 19,1 |
| Iqr | 2,25 |

| Lab. | Codeine (ng/mg | Z-score | Result |
|------|----------------|---------|--------|
| 33 | 0,14 | -1,25 | Satisfactory |
| 39 | 0,29 | -1,01 | Satisfactory |
| 31 | 0,5 | -0,69 | Satisfactory |
| 18 | 0,53 | -0,64 | Satisfactory |
| 28 | 0,54 | -0,62 | Satisfactory |
| 35 | 0,54 | -0,62 | Satisfactory |
| 2 | 0,58 | -0,56 | Satisfactory |
| 3 | 0,6 | -0,53 | Satisfactory |
| 13 | 0,6 | -0,53 | Satisfactory |
| 24 | 0,69 | -0,39 | Satisfactory |
| 1 | 0,7 | -0,37 | Satisfactory |
| 11 | 0,7 | -0,37 | Satisfactory |
| 29 | 0,74 | -0,31 | Satisfactory |
| 36 | 0,75 | -0,29 | Satisfactory |
| 8 | 0,8 | -0,22 | Satisfactory |
| 26 | 0,81 | -0,20 | Satisfactory |
| 6 | 0,85 | -0,14 | Satisfactory |
| 10 | 0,9 | -0,06 | Satisfactory |
| 9 | 0,94 | 0 | Satisfactory |
| 25 | 0,94 | 0 | Satisfactory |
| 22 | 0,95 | 0,01 | Satisfactory |
| 15 | 0,96 | 0,03 | Satisfactory |
| 41 | 0,97 | 0,05 | Satisfactory |
| 4 | 1,01 | 0,11 | Satisfactory |
| 20 | 1,05 | 0,17 | Satisfactory |
| 37 | 1,1 | 0,25 | Satisfactory |

| Lab. | Codeine (ng/mg) | Z-score | Result |
|------|-----------------|---------|--------|
| 7 | 1,2 | 0,40 | Satisfactory |
| 5 | 1,33 | 0,61 | Satisfactory |
| 34 | 1,36 | 0,65 | Satisfactory |
| 38 | 1,37 | 0,67 | Satisfactory |
| 21 | 1,4 | 0,72 | Satisfactory |
| 16 | 1,67 | 1,14 | Satisfactory |
| 40 | 1,7 | 1,19 | Satisfactory |
| 27 | 1,77 | 1,30 | Satisfactory |
| 12 | 1,92 | 1,53 | Satisfactory |
| 23 | 2,1 | 1,81 | Satisfactory |
| 30 | 2,39 | 2,26 | Questionable |
| 32 | P | | |
| 14 | NA | | |
| 17 | NA | | |
| 19 | NA | | |

| | |
|-----------|-------|
| Average | 1,01 |
| SD | 0,50 |
| CV% | 49,52 |
| Median | 0,94 |
| Minimum | 0,14 |
| Quartile 25 | 0,69 |
| Quartile 75 | 1,33 |
| Maximum | 2,39 |
| Iqr | 0,64 |
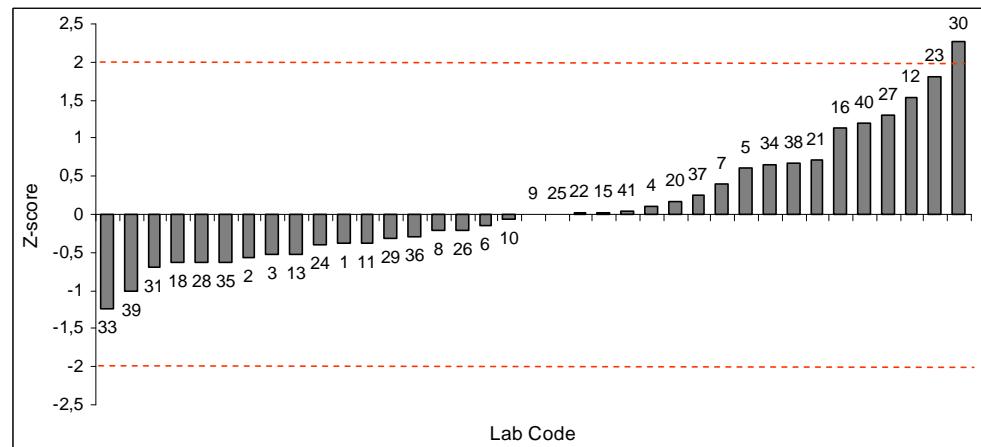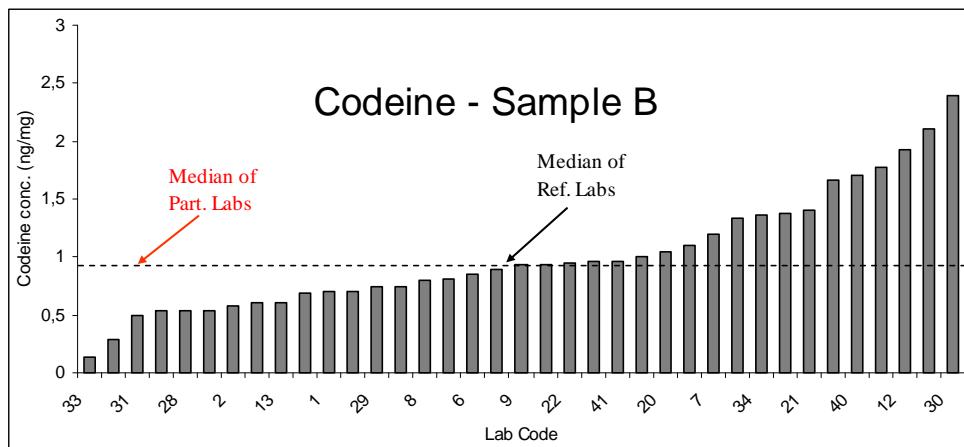
Cocaine - Sample B
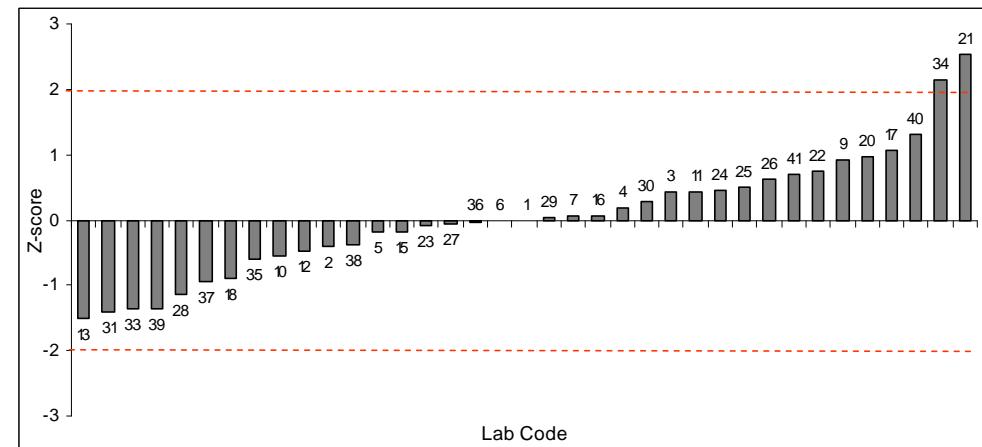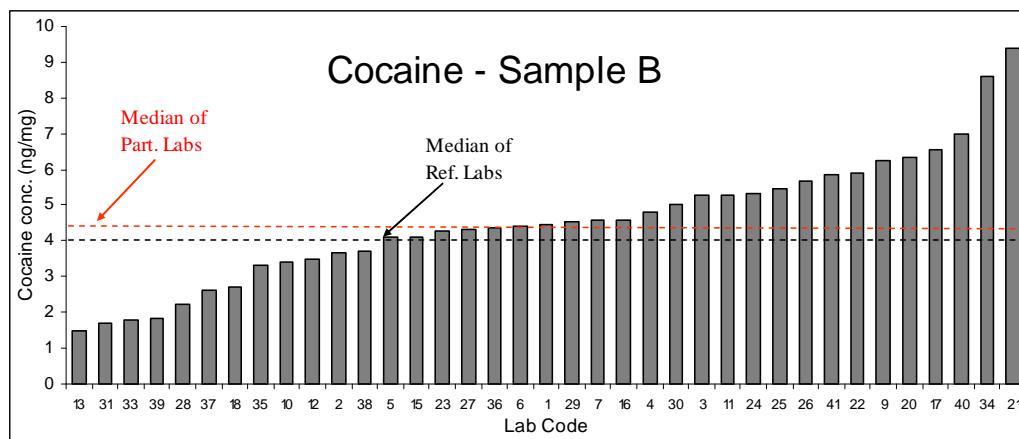
| Lab. | Cocaine (ng/mg) | Z-score | Result |
|---|---|---|---|
| 13 | 1,5 | -1,52 | Satisfactory |
| 31 | 1,7 | -1,41 | Satisfactory |
| 33 | 1,81 | -1,36 | Satisfactory |
| 39 | 1,82 | -1,35 | Satisfactory |
| 28 | 2,24 | -1,14 | Satisfactory |
| 37 | 2,6 | -0,95 | Satisfactory |
| 18 | 2,72 | -0,89 | Satisfactory |
| 35 | 3,3 | -0,59 | Satisfactory |
| 10 | 3,4 | -0,54 | Satisfactory |
| 12 | 3,51 | -0,48 | Satisfactory |
| 2 | 3,68 | -0,4 | Satisfactory |
| 38 | 3,71 | -0,38 | Satisfactory |
| 5 | 4,1 | -0,18 | Satisfactory |
| 15 | 4,1 | -0,18 | Satisfactory |
| 23 | 4,3 | -0,08 | Satisfactory |
| 27 | 4,33 | -0,07 | Satisfactory |
| 36 | 4,38 | -0,04 | Satisfactory |
| 6 | 4,42 | -0,02 | Satisfactory |
| 1 | 4,46 | 0 | Satisfactory |
| 29 | 4,55 | 0,04 | Satisfactory |
| 7 | 4,6 | 0,07 | Satisfactory |
| 16 | 4,6 | 0,07 | Satisfactory |
| 4 | 4,8 | 0,17 | Satisfactory |
| 30 | 5,03 | 0,29 | Satisfactory |
| 3 | 5,3 | 0,43 | Satisfactory |
| 11 | 5,3 | 0,43 | Satisfactory |

| Lab. | Cocaine (ng/mg) | Z-score | Result |
|---|---|---|---|
| 24 | 5,33 | 0,45 | Satisfactory |
| 25 | 5,46 | 0,51 | Satisfactory |
| 26 | 5,66 | 0,61 | Satisfactory |
| 41 | 5,84 | 0,71 | Satisfactory |
| 22 | 5,9 | 0,74 | Satisfactory |
| 9 | 6,24 | 0,91 | Satisfactory |
| 20 | 6,34 | 0,96 | Satisfactory |
| 17 | 6,53 | 1,06 | Satisfactory |
| 40 | 7,0 | 1,30 | Satisfactory |
| 34 | 8,62 | 2,13 | Questionable |
| 21 | 9,4 | 2,53 | Questionable |
| 19 | P | | |
| 32 | P | | |
| 8 | NA | | |
| 14 | NA | | |

| | |
|---|---|
| Average | 4,56 |
| SD | 1,76 |
| CV% | 38,61 |
| Median | 4,46 |
| Minimum | 1,5 |
| Quartile 25 | 3,51 |
| Quartile 75 | 5,46 |
| Maximum | 9,4 |
| Iqr | 1,95 |

| Lab. | BE (ng/mg) | Z-score | Result |
|------|-----------|---------|--------|
| 33 | 2,25 | -1,56 | Satisfactory |
| 39 | 2,36 | -1,53 | Satisfactory |
| 13 | 3,1 | -1,30 | Satisfactory |
| 18 | 3,15 | -1,28 | Satisfactory |
| 37 | 3,7 | -1,12 | Satisfactory |
| 31 | 3,8 | -1,09 | Satisfactory |
| 1 | 4,28 | -0,94 | Satisfactory |
| 28 | 4,56 | -0,85 | Satisfactory |
| 10 | 4,9 | -0,75 | Satisfactory |
| 5 | 5,73 | -0,49 | Satisfactory |
| 15 | 6,2 | -0,34 | Satisfactory |
| 34 | 6,32 | -0,31 | Satisfactory |
| 25 | 6,75 | -0,17 | Satisfactory |
| 35 | 6,9 | -0,13 | Satisfactory |
| 30 | 7,05 | -0,08 | Satisfactory |
| 24 | 7,09 | -0,07 | Satisfactory |
| 4 | 7,29 | -0,01 | Satisfactory |
| 16 | 7,32 | 0 | Satisfactory |
| 29 | 7,36 | 0,01 | Satisfactory |
| 6 | 7,59 | 0,08 | Satisfactory |
| 3 | 7,7 | 0,12 | Satisfactory |
| 23 | 7,8 | 0,15 | Satisfactory |
| 7 | 7,9 | 0,16 | Satisfactory |
| 38 | 8,05 | 0,22 | Satisfactory |
| 12 | 8,25 | 0,29 | Satisfactory |
| 17 | 8,31 | 0,30 | Satisfactory |

| Lab. | BE (ng/mg) | Z-score | Result |
|------|-----------|---------|--------|
| 11 | 8,8 | 0,46 | Satisfactory |
| 27 | 8,83 | 0,46 | Satisfactory |
| 26 | 8,9 | 0,49 | Satisfactory |
| 20 | 9,01 | 0,52 | Satisfactory |
| 41 | 9,31 | 0,61 | Satisfactory |
| 2 | 9,35 | 0,62 | Satisfactory |
| 22 | 9,5 | 0,67 | Satisfactory |
| 9 | 10,5 | 0,98 | Satisfactory |
| 40 | 14,7 | 2,28 | Questionable |
| 36 | >4,69 | | |
| 19 | P | | |
| 32 | P | | |
| 8 | NA | | |
| 14 | NA | | |
| 21 | NA | | |

| | |
|------|------|
| Average | 6,99 |
| SD | 2,54 |
| CV% | 36,33 |
| Median | 7,32 |
| Minimum | 2,25 |
| Quartile 25 | 5,31 |
| Quartile 75 | 8,55 |
| Maximum | 14,7 |
| Iqr | 3,24 |
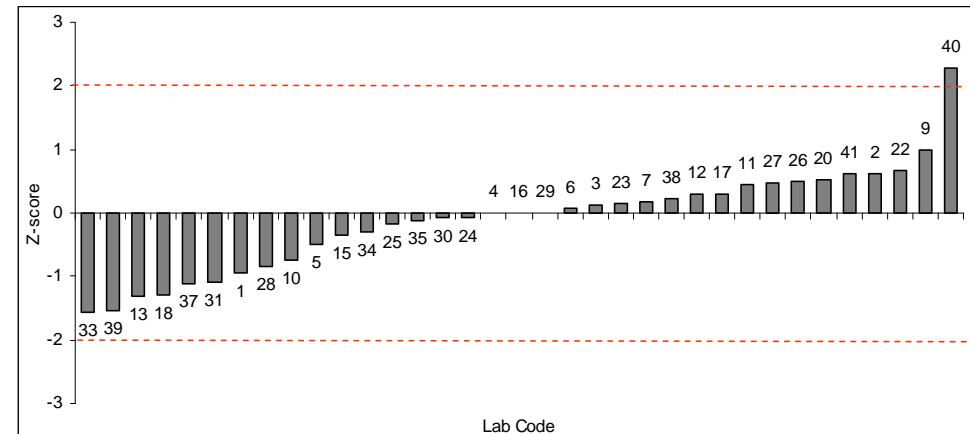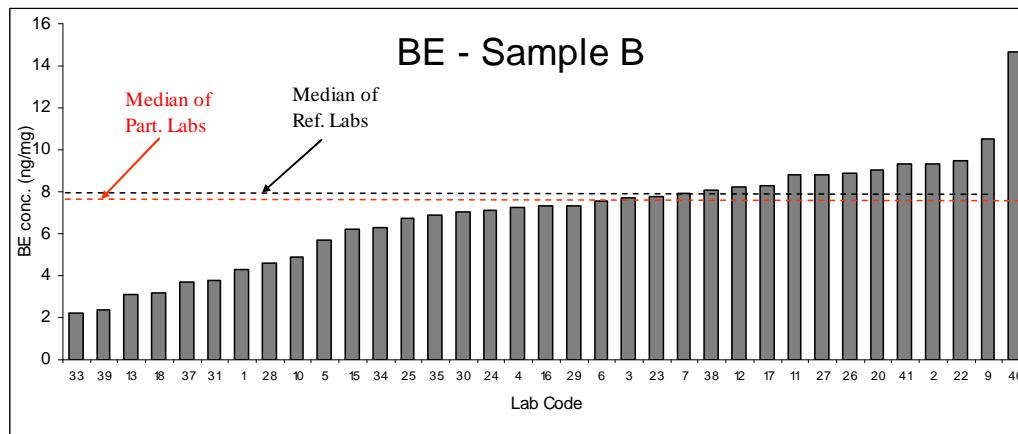
Amphetamine - Sample B
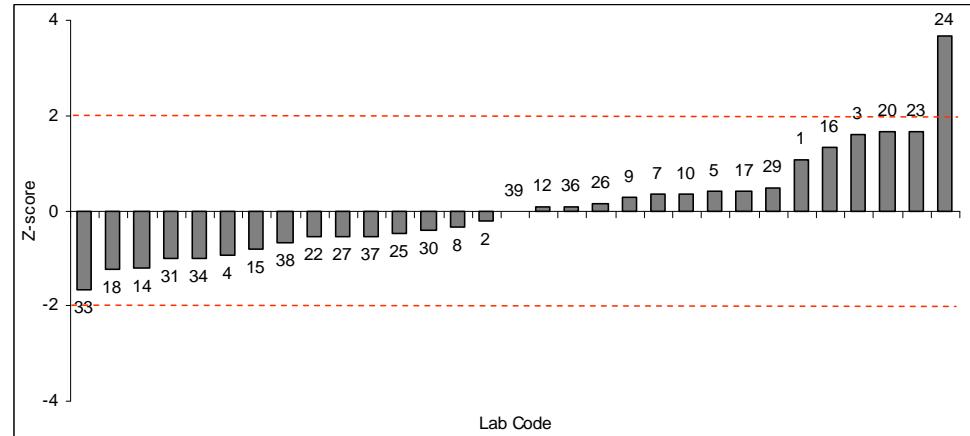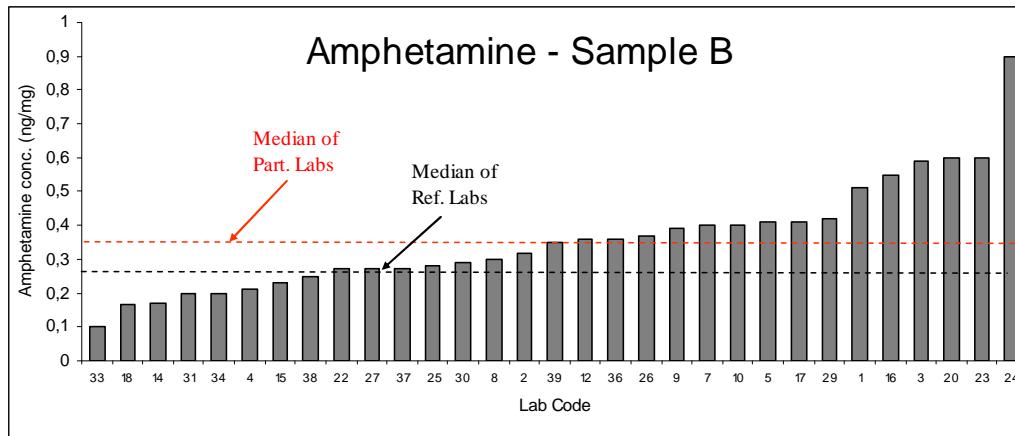


| Lab. | Amphetamine (ng/mg) | Z-score | Result |
|---|---|---|---|
| 33 | 0,1 | -1,67 | Satisfactory |
| 18 | 0,167 | -1,22 | Satisfactory |
| 14 | 0,17 | -1,2 | Satisfactory |
| 31 | 0,2 | -1,0 | Satisfactory |
| 34 | 0,2 | -1,0 | Satisfactory |
| 4 | 0,21 | -0,93 | Satisfactory |
| 15 | 0,23 | -0,8 | Satisfactory |
| 38 | 0,25 | -0,67 | Satisfactory |
| 22 | 0,27 | -0,53 | Satisfactory |
| 27 | 0,27 | -0,53 | Satisfactory |
| 37 | 0,27 | -0,53 | Satisfactory |
| 25 | 0,28 | -0,47 | Satisfactory |
| 30 | 0,29 | -0,4 | Satisfactory |
| 8 | 0,3 | -0,33 | Satisfactory |
| 2 | 0,32 | -0,2 | Satisfactory |
| 39 | 0,35 | 0 | Satisfactory |
| 12 | 0,36 | 0,07 | Satisfactory |
| 36 | 0,36 | 0,07 | Satisfactory |
| 26 | 0,37 | 0,13 | Satisfactory |
| 9 | 0,39 | 0,27 | Satisfactory |
| 7 | 0,4 | 0,33 | Satisfactory |
| 10 | 0,4 | 0,33 | Satisfactory |
| 5 | 0,41 | 0,4 | Satisfactory |
| 17 | 0,41 | 0,4 | Satisfactory |
| 29 | 0,42 | 0,47 | Satisfactory |
| 1 | 0,51 | 1,07 | Satisfactory |

| Lab. | Amphetamine (ng/mg) | Z-score | Result |
|---|---|---|---|
| 16 | 0,55 | 1,33 | Satisfactory |
| 3 | 0,59 | 1,6 | Satisfactory |
| 20 | 0,6 | 1,67 | Satisfactory |
| 23 | 0,6 | 1,67 | Satisfactory |
| 24 | 0,9 | 3,67 | Unsatisfactory |
| 40 | N | | |
| 6 | N | | |
| 13 | N | | |
| 28 | N | | |
| 35 | N | | |
| 11 | P | | |
| 32 | P | | |
| 41 | U | | |
| 19 | NA | | |
| 21 | NA | | |

| | |
|---|---|
| Average | 0,36 |
| SD | 0,16 |
| CV% | 45,11 |
| Median | 0,35 |
| Minimum | 0,1 |
| Quartile 25 | 0,26 |
| Quartile 75 | 0,41 |
| Maximum | 0,9 |
| Iqr | 0,15 |

THC - Sample B
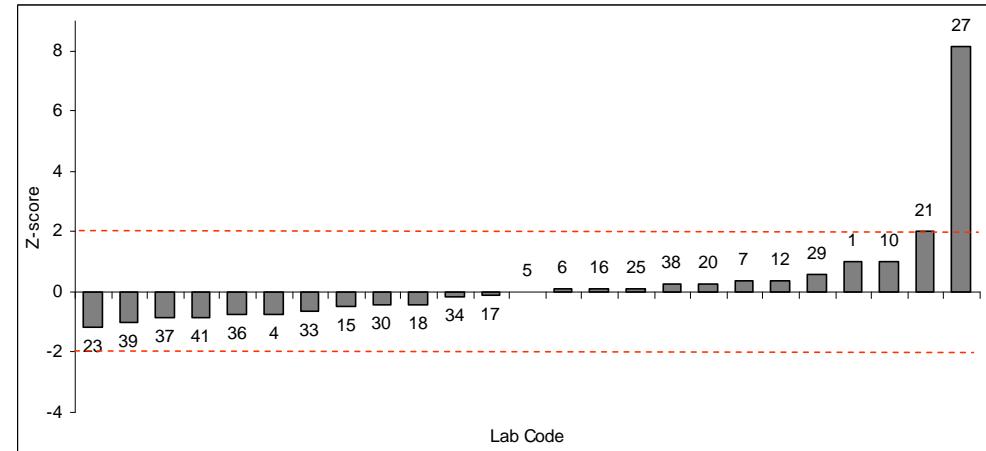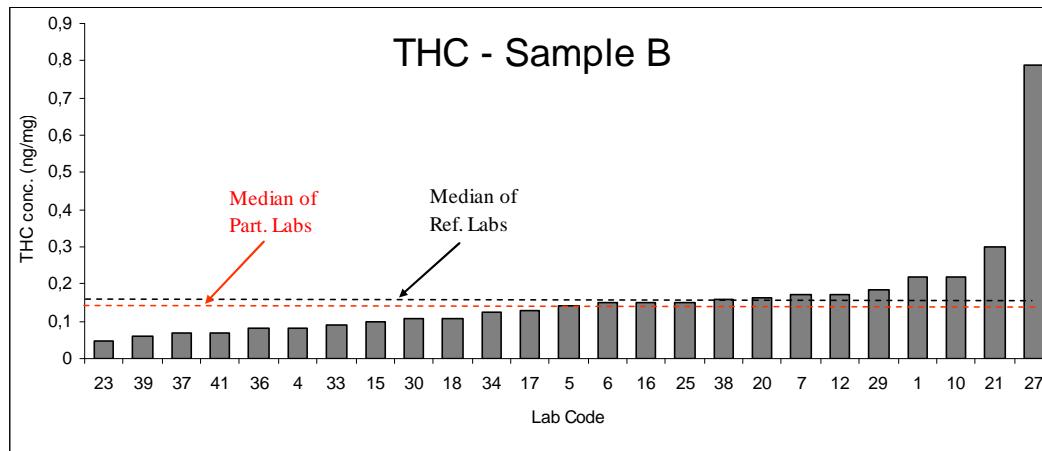


| Lab. | THC (ng/mg) | Z-score | Result |
|------|-------------|---------|--------|
| 23 | 0,048 | -1,15 | Satisfactory |
| 39 | 0,06 | -1,0 | Satisfactory |
| 37 | 0,07 | -0,87 | Satisfactory |
| 41 | 0,07 | -0,87 | Satisfactory |
| 36 | 0,08 | -0,75 | Satisfactory |
| 4 | 0,081 | -0,74 | Satisfactory |
| 33 | 0,09 | -0,62 | Satisfactory |
| 15 | 0,1 | -0,5 | Satisfactory |
| 30 | 0,106 | -0,42 | Satisfactory |
| 18 | 0,107 | -0,41 | Satisfactory |
| 34 | 0,125 | -0,19 | Satisfactory |
| 17 | 0,13 | -0,12 | Satisfactory |
| 5 | 0,14 | 0 | Satisfactory |
| 6 | 0,15 | 0,12 | Satisfactory |
| 16 | 0,15 | 0,12 | Satisfactory |
| 25 | 0,15 | 0,12 | Satisfactory |
| 38 | 0,16 | 0,25 | Satisfactory |
| 20 | 0,162 | 0,27 | Satisfactory |
| 7 | 0,17 | 0,37 | Satisfactory |
| 12 | 0,17 | 0,37 | Satisfactory |
| 29 | 0,186 | 0,57 | Satisfactory |
| 1 | 0,22 | 1,0 | Satisfactory |
| 10 | 0,22 | 1,0 | Satisfactory |
| 21 | 0,3 | 2,0 | Questionable |
| 27 | 0,79 | 8,12 | Unsatisfactory |
| 28 | N | | |

| Lab. | THC (ng/mg) | Z-score | Result |
|------|-------------|---------|--------|
| 13 | N | | |
| 19 | N | | |
| 31 | N | | |
| 35 | N | | |
| 32 | P | | |
| 2 | NA | | |
| 3 | NA | | |
| 8 | NA | | |
| 9 | NA | | |
| 11 | NA | | |
| 14 | NA | | |
| 22 | NA | | |
| 24 | NA | | |
| 26 | NA | | |
| 40 | NA | | |

| | |
|-----------|-------|
| Average | 0,16 |
| SD | 0,14 |
| CV% | 87,00 |
| Median | 0,14 |
| Minimum | 0,048 |
| Quartile 25 | 0,09 |
| Quartile 75 | 0,17 |
| Maximum | 0,79 |
| Iqr | 0,08 |

| Lab. | MAM (ng/mg) | Z-score | Result |
|---|---|---|---|
| 31 | 0,2 | -1,52 | Satisfactory |
| 39 | 0,36 | -1,12 | Satisfactory |
| 33 | 0,37 | -1,1 | Satisfactory |
| 28 | 0,38 | -1,07 | Satisfactory |
| 18 | 0,42 | -0,97 | Satisfactory |
| 41 | 0,44 | -0,92 | Satisfactory |
| 35 | 0,5 | -0,77 | Satisfactory |
| 1 | 0,55 | -0,65 | Satisfactory |
| 8 | 0,6 | -0,52 | Satisfactory |
| 23 | 0,6 | -0,52 | Satisfactory |
| 4 | 0,61 | -0,5 | Satisfactory |
| 36 | 0,67 | -0,35 | Satisfactory |
| 10 | 0,7 | -0,27 | Satisfactory |
| 24 | 0,72 | -0,22 | Satisfactory |
| 26 | 0,73 | -0,2 | Satisfactory |
| 29 | 0,78 | -0,07 | Satisfactory |
| 3 | 0,8 | -0,02 | Satisfactory |
| 25 | 0,8 | -0,02 | Satisfactory |
| 34 | 0,82 | 0,02 | Satisfactory |
| 37 | 0,82 | 0,02 | Satisfactory |
| 20 | 0,83 | 0,05 | Satisfactory |
| 6 | 0,88 | 0,17 | Satisfactory |
| 15 | 0,92 | 0,27 | Satisfactory |
| 9 | 0,95 | 0,35 | Satisfactory |
| 30 | 0,95 | 0,35 | Satisfactory |
| 5 | 0,96 | 0,37 | Satisfactory |

| Lab. | MAM (ng/mg) | Z-score | Result |
|---|---|---|---|
| 7 | 1,0 | 0,47 | Satisfactory |
| 11 | 1,0 | 0,47 | Satisfactory |
| 13 | 1,0 | 0,47 | Satisfactory |
| 2 | 1,01 | 0,5 | Satisfactory |
| 27 | 1,08 | 0,67 | Satisfactory |
| 21 | 1,1 | 0,72 | Satisfactory |
| 22 | 1,1 | 0,72 | Satisfactory |
| 17 | 1,2 | 0,97 | Satisfactory |
| 12 | 1,22 | 1,02 | Satisfactory |
| 16 | 1,34 | 1,32 | Satisfactory |
| 40 | ELISA - | | |
| 38 | NA | | |
| 14 | NA | | |
| 19 | P | | |
| 32 | P | | |

| | |
|---|---|
| Average | 0,79 |
| SD | 0,27 |
| CV% | 34,28 |
| Median | 0,81 |
| Minimum | 0,2 |
| Quartile 25 | 0,6 |
| Quartile 75 | 1,0 |
| Maximum | 1,34 |
| Iqr | 0,4 |
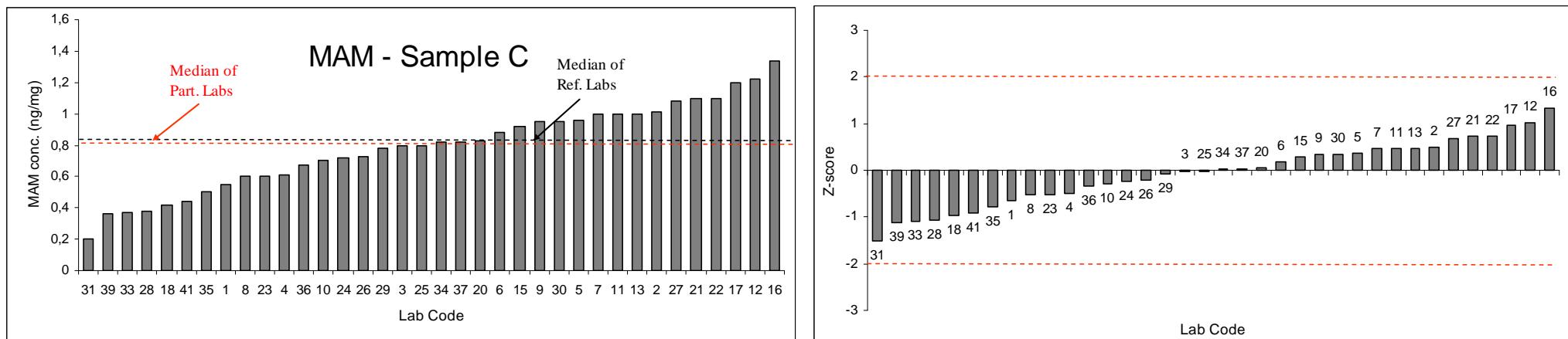
Morphine - Sample C
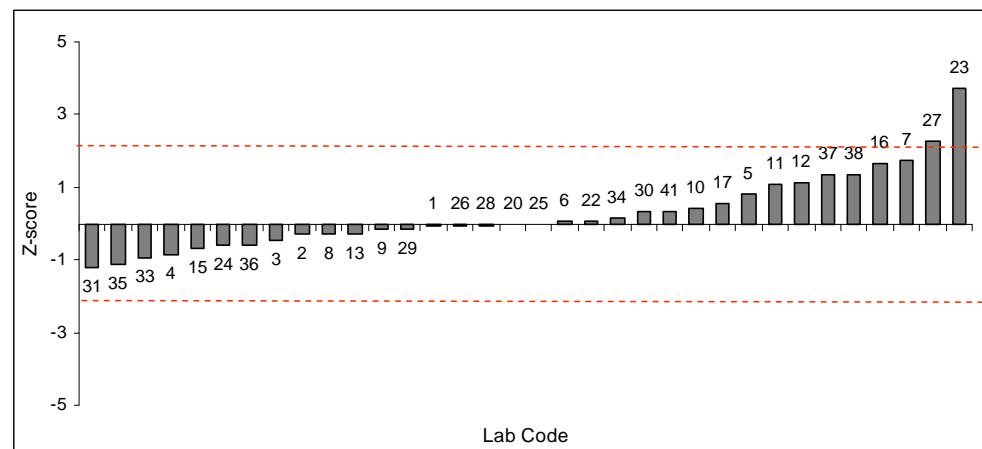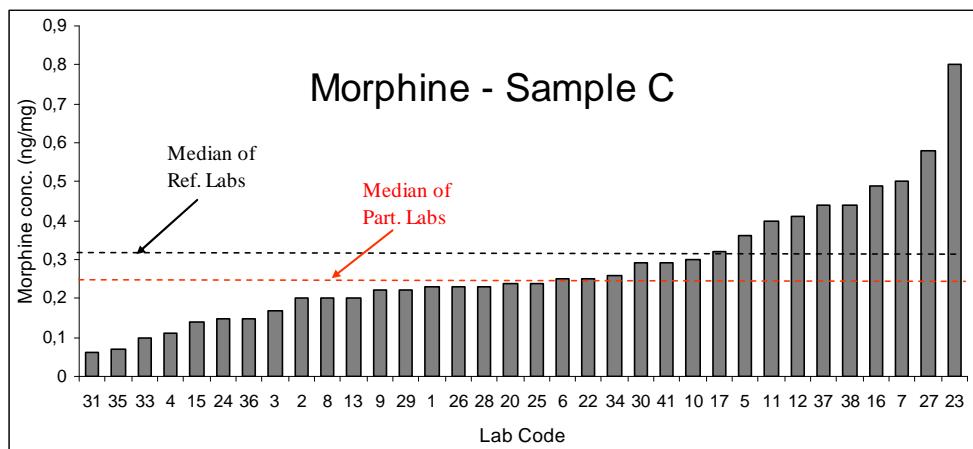
| Lab. | Morphine (ng/mg) | Z-score | Result |
|------|------------------|---------|--------|
| 31 | 0,06 | -1,2 | Satisfactory |
| 35 | 0,07 | -1,13 | Satisfactory |
| 33 | 0,1 | -0,93 | Satisfactory |
| 4 | 0,11 | -0,87 | Satisfactory |
| 15 | 0,14 | -0,67 | Satisfactory |
| 24 | 0,15 | -0,6 | Satisfactory |
| 36 | 0,15 | -0,6 | Satisfactory |
| 3 | 0,17 | -0,47 | Satisfactory |
| 2 | 0,2 | -0,27 | Satisfactory |
| 8 | 0,2 | -0,27 | Satisfactory |
| 13 | 0,2 | -0,27 | Satisfactory |
| 9 | 0,22 | -0,13 | Satisfactory |
| 29 | 0,22 | -0,13 | Satisfactory |
| 1 | 0,23 | -0,07 | Satisfactory |
| 26 | 0,23 | -0,07 | Satisfactory |
| 28 | 0,23 | -0,07 | Satisfactory |
| 20 | 0,24 | 0 | Satisfactory |
| 25 | 0,24 | 0 | Satisfactory |
| 6 | 0,25 | 0,07 | Satisfactory |
| 22 | 0,25 | 0,07 | Satisfactory |
| 34 | 0,26 | 0,13 | Satisfactory |
| 30 | 0,29 | 0,33 | Satisfactory |
| 41 | 0,29 | 0,33 | Satisfactory |
| 10 | 0,3 | 0,4 | Satisfactory |
| 17 | 0,32 | 0,53 | Satisfactory |
| 5 | 0,36 | 0,8 | Satisfactory |

| Lab. | Morphine (ng/mg) | Z-score | Result |
|------|------------------|---------|--------|
| 11 | 0,4 | 1,07 | Satisfactory |
| 12 | 0,41 | 1,13 | Satisfactory |
| 37 | 0,44 | 1,33 | Satisfactory |
| 38 | 0,44 | 1,33 | Satisfactory |
| 16 | 0,49 | 1,67 | Satisfactory |
| 7 | 0,5 | 1,73 | Satisfactory |
| 27 | 0,58 | 2,27 | Questionalbe |
| 23 | 0,8 | 3,73 | Unsatisfactory |
| 18 | N | | |
| 21 | N | | |
| 39 | N | | |
| 40 | N | | |
| 14 | NA | | |
| 19 | P | | |
| 32 | U | | |

| | |
|---|---|
| Average | 0,28 |
| SD | 0,15 |
| CV% | 54,75 |
| Median | 0,24 |
| Minimum | 0,06 |
| Quartile 25 | 0,2 |
| Quartile 75 | 0,35 |
| Maximum | 0,8 |
| Iqr | 0,15 |

Codeine - Sample C
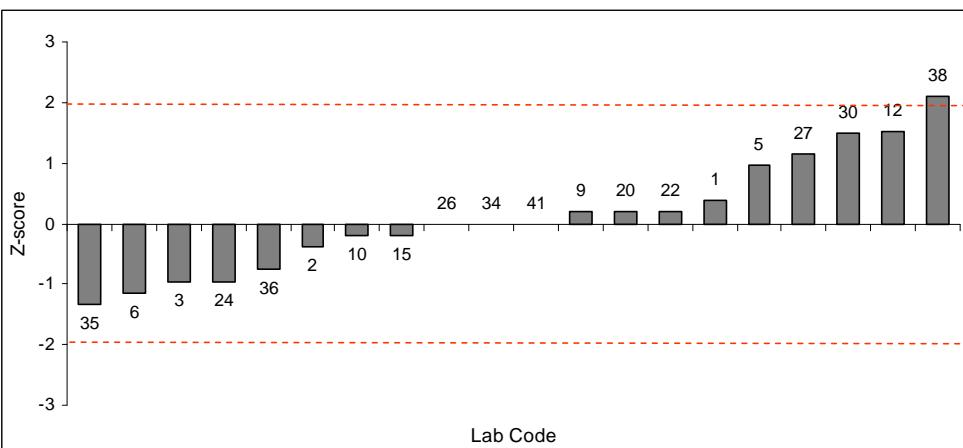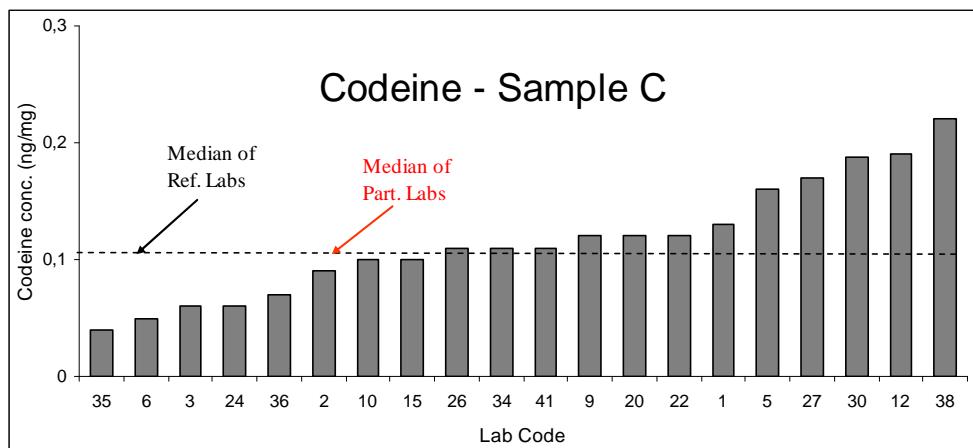
| Lab. | Codeine (ng/mg) | Z-score | Result |
|------|-----------------|---------|--------|
| 35 | 0,04 | -1,33 | Satisfactory |
| 6 | 0,05 | -1,14 | Satisfactory |
| 3 | 0,06 | -0,95 | Satisfactory |
| 24 | 0,06 | -0,95 | Satisfactory |
| 36 | 0,07 | -0,76 | Satisfactory |
| 2 | 0,09 | -0,38 | Satisfactory |
| 10 | 0,1 | -0,19 | Satisfactory |
| 15 | 0,1 | -0,19 | Satisfactory |
| 26 | 0,11 | 0 | Satisfactory |
| 34 | 0,11 | 0 | Satisfactory |
| 41 | 0,11 | 0 | Satisfactory |
| 9 | 0,12 | 0,19 | Satisfactory |
| 20 | 0,12 | 0,19 | Satisfactory |
| 22 | 0,12 | 0,19 | Satisfactory |
| 1 | 0,13 | 0,38 | Satisfactory |
| 5 | 0,16 | 0,95 | Satisfactory |
| 27 | 0,17 | 1,14 | Satisfactory |
| 30 | 0,188 | 1,48 | Satisfactory |
| 12 | 0,19 | 1,52 | Satisfactory |
| 38 | 0,22 | 2,09 | Questionalbe |
| 29 | <0,05 | | |
| 37 | <LOQ | | |
| 4 | N | | |
| 7 | N | | |
| 8 | N | | |
| 13 | N | | |

| Lab. | Codeine (ng/mg) | Z-score | Result |
|------|-----------------|---------|--------|
| 16 | N | | |
| 18 | N | | |
| 21 | N | | |
| 23 | N | | |
| 25 | N | | |
| 28 | N | | |
| 31 | N | | |
| 33 | N | | |
| 39 | N | | |
| 40 | N | | |
| 14 | NA | | |
| 17 | NA | | |
| 19 | NA | | |
| 11 | P | | |
| 32 | U | | |

| | |
|---|---|
| Average | 0,12 |
| SD | 0,05 |
| CV% | 41,55 |
| Median | 0,11 |
| Minimum | 0,04 |
| Quartile 25 | 0,085 |
| Quartile 75 | 0,14 |
| Maximum | 0,22 |
| Iqr | 0,05 |

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

Cocaine - Sample C
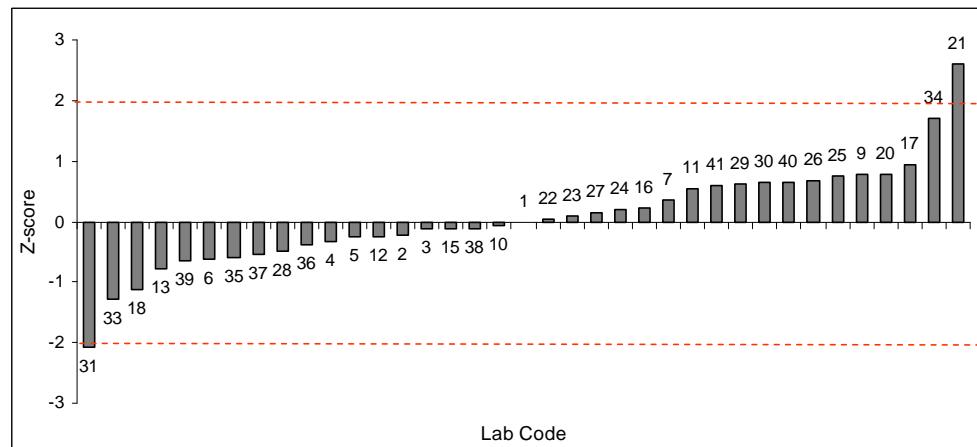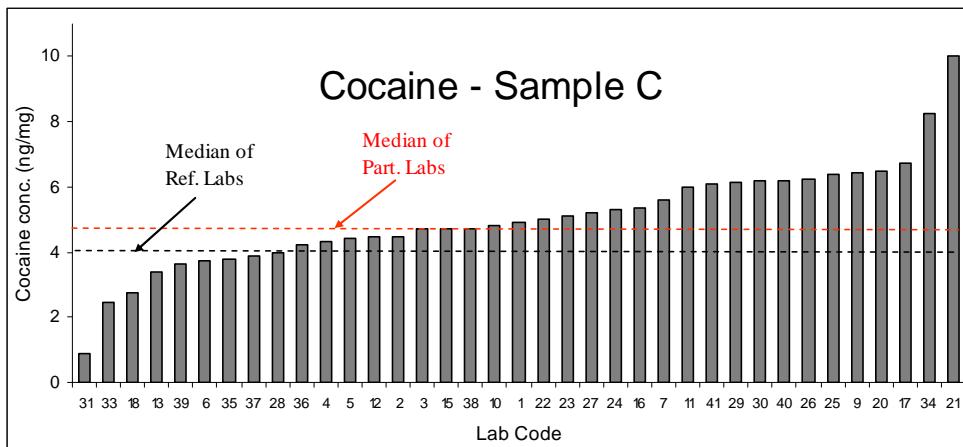
| Lab. | Cocaine (ng/mg) | Z-score | Result |
|------|-----------------|---------|--------|
| 31 | 0,9 | -2,08 | Questionalbe |
| 33 | 2,44 | -1,28 | Satisfactory |
| 18 | 2,75 | -1,12 | Satisfactory |
| 13 | 3,4 | -0,79 | Satisfactory |
| 39 | 3,65 | -0,66 | Satisfactory |
| 6 | 3,72 | -0,62 | Satisfactory |
| 35 | 3,8 | -0,58 | Satisfactory |
| 37 | 3,9 | -0,53 | Satisfactory |
| 28 | 3,99 | -0,48 | Satisfactory |
| 36 | 4,2 | -0,37 | Satisfactory |
| 4 | 4,3 | -0,32 | Satisfactory |
| 5 | 4,42 | -0,26 | Satisfactory |
| 12 | 4,46 | -0,24 | Satisfactory |
| 2 | 4,47 | -0,24 | Satisfactory |
| 3 | 4,7 | -0,12 | Satisfactory |
| 15 | 4,7 | -0,12 | Satisfactory |
| 38 | 4,71 | -0,11 | Satisfactory |
| 10 | 4,8 | -0,07 | Satisfactory |
| 1 | 4,93 | 0 | Satisfactory |
| 22 | 5,0 | 0,04 | Satisfactory |
| 23 | 5,1 | 0,09 | Satisfactory |
| 27 | 5,2 | 0,14 | Satisfactory |
| 24 | 5,3 | 0,19 | Satisfactory |
| 16 | 5,37 | 0,22 | Satisfactory |
| 7 | 5,6 | 0,34 | Satisfactory |
| 11 | 6,0 | 0,55 | Satisfactory |

| Lab. | Cocaine (ng/mg) | Z-score | Result |
|------|-----------------|---------|--------|
| 41 | 6,09 | 0,60 | Satisfactory |
| 29 | 6,14 | 0,62 | Satisfactory |
| 30 | 6,19 | 0,65 | Satisfactory |
| 40 | 6,2 | 0,65 | Satisfactory |
| 26 | 6,24 | 0,67 | Satisfactory |
| 25 | 6,37 | 0,74 | Satisfactory |
| 9 | 6,45 | 0,78 | Satisfactory |
| 20 | 6,46 | 0,79 | Satisfactory |
| 17 | 6,75 | 0,94 | Satisfactory |
| 34 | 8,26 | 1,72 | Satisfactory |
| 21 | 10,0 | 2,61 | Questionalbe |
| 8 | NA | | |
| 14 | NA | | |
| 19 | P | | |
| 32 | P | | |

| | |
|------------|-------|
| Average | 5,05 |
| SD | 1,59 |
| CV% | 31,49 |
| Median | 4,93 |
| Minimum | 0,9 |
| Quartile 25 | 4,2 |
| Quartile 75 | 6,14 |
| Maximum | 10,0 |
| Iqr | 1,94 |

| Lab. | BE (ng/mg) | Z-score | Result |
|------|-----------|---------|--------|
| 31 | 2 | -1,54 | Satisfactory |
| 33 | 2,74 | -1,33 | Satisfactory |
| 37 | 3,9 | -1,00 | Satisfactory |
| 18 | 4,38 | -0,86 | Satisfactory |
| 39 | 4,6 | -0,80 | Satisfactory |
| 13 | 4,9 | -0,71 | Satisfactory |
| 2 | 5,03 | -0,68 | Satisfactory |
| 34 | 5,52 | -0,54 | Satisfactory |
| 3 | 6,2 | -0,34 | Satisfactory |
| 10 | 6,2 | -0,34 | Satisfactory |
| 16 | 6,25 | -0,33 | Satisfactory |
| 6 | 6,28 | -0,32 | Satisfactory |
| 24 | 6,29 | -0,32 | Satisfactory |
| 35 | 6,5 | -0,26 | Satisfactory |
| 4 | 6,59 | -0,23 | Satisfactory |
| 5 | 6,72 | -0,19 | Satisfactory |
| 15 | 6,9 | -0,14 | Satisfactory |
| 1 | 7,4 | 0 | Satisfactory |
| 28 | 7,43 | 0,01 | Satisfactory |
| 25 | 7,58 | 0,05 | Satisfactory |
| 29 | 8,42 | 0,29 | Satisfactory |
| 22 | 8,6 | 0,34 | Satisfactory |
| 23 | 8,7 | 0,37 | Satisfactory |
| 41 | 8,76 | 0,39 | Satisfactory |
| 7 | 9,3 | 0,54 | Satisfactory |
| 20 | 9,49 | 0,59 | Satisfactory |

| Lab. | BE (ng/mg) | Z-score | Result |
|------|-----------|---------|--------|
| 11 | 9,9 | 0,71 | Satisfactory |
| 17 | 10,03 | 0,75 | Satisfactory |
| 26 | 10,21 | 0,80 | Satisfactory |
| 9 | 10,4 | 0,86 | Satisfactory |
| 27 | 10,5 | 0,89 | Satisfactory |
| 30 | 10,54 | 0,90 | Satisfactory |
| 38 | 11,47 | 1,164 | Satisfactory |
| 12 | 12,03 | 1,32 | Satisfactory |
| 40 | 14,5 | 2,03 | Questionable |
| 36 | >4,76 | | |
| 8 | NA | | |
| 14 | NA | | |
| 21 | NA | | |
| 19 | P | | |
| 32 | P | | |

| | |
|------|------|
| Average | 7,61 |
| SD | 2,70 |
| CV% | 35,47 |
| Median | 7,4 |
| Minimum | 2 |
| Quartile 25 | 6,2 |
| Quartile 75 | 9,69 |
| Maximum | 14,5 |
| Iqr | 3,49 |
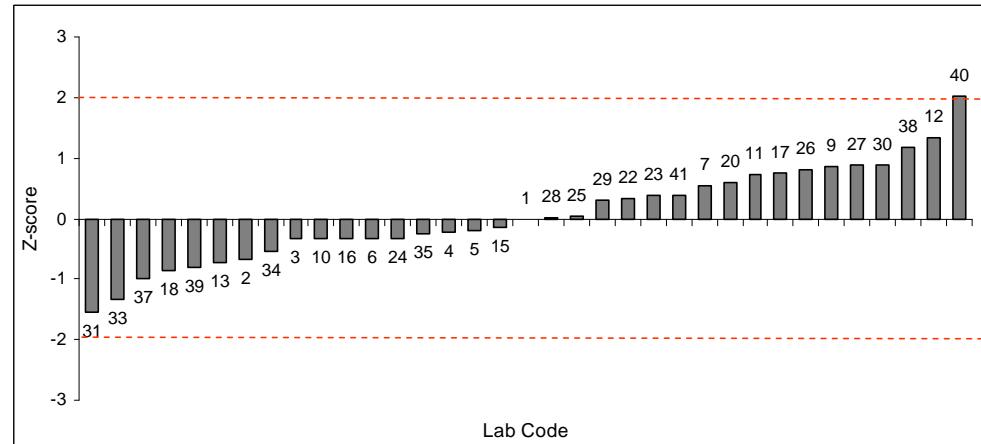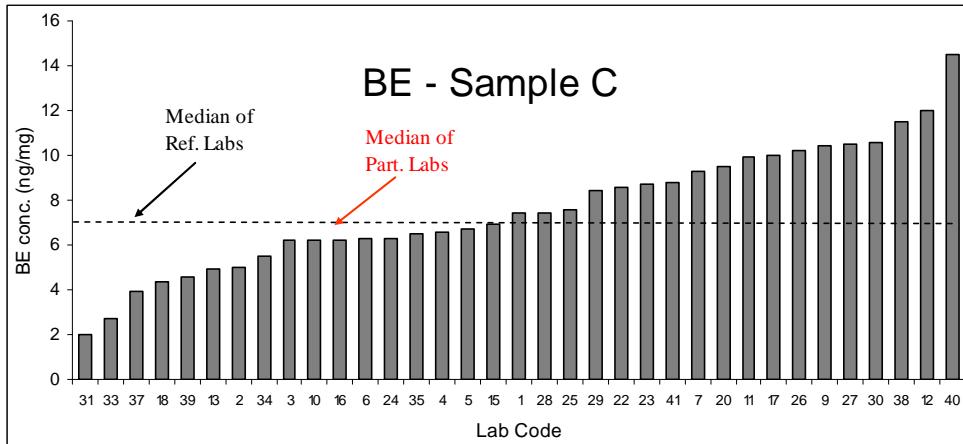
Amphetamine - Sample C
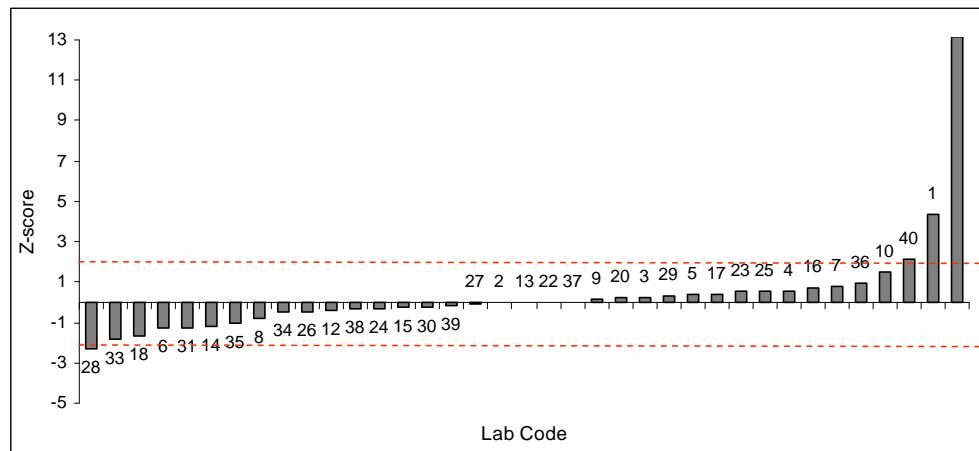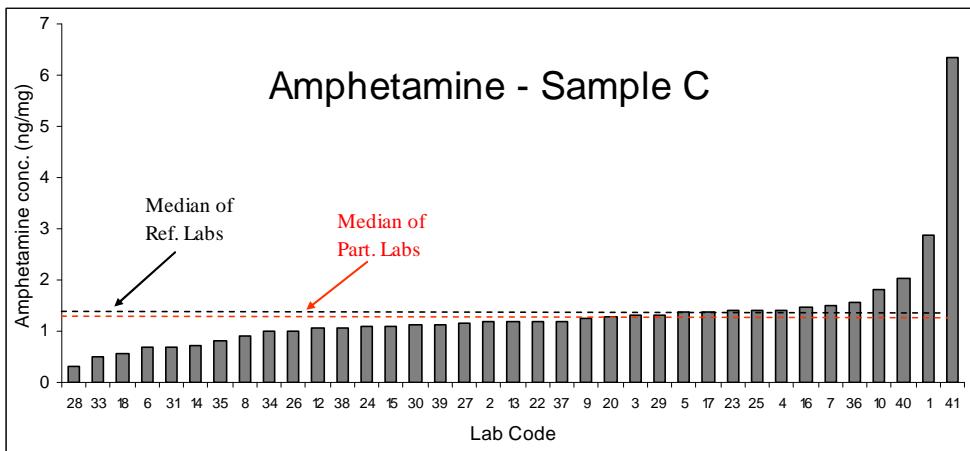
| Lab. | Amphetamine (ng/mg) | Z-score | Result |
|------|---------------------|---------|--------|
| 28 | 0,3 | -2,31 | Questionalbe |
| 33 | 0,49 | -1,82 | Satisfactory |
| 18 | 0,55 | -1,67 | Satisfactory |
| 6 | 0,69 | -1,31 | Satisfactory |
| 31 | 0,7 | -1,28 | Satisfactory |
| 14 | 0,72 | -1,23 | Satisfactory |
| 35 | 0,81 | -1,0 | Satisfactory |
| 8 | 0,9 | -0,77 | Satisfactory |
| 34 | 1,0 | -0,51 | Satisfactory |
| 26 | 1,01 | -0,48 | Satisfactory |
| 12 | 1,05 | -0,38 | Satisfactory |
| 38 | 1,07 | -0,33 | Satisfactory |
| 24 | 1,08 | -0,31 | Satisfactory |
| 15 | 1,1 | -0,26 | Satisfactory |
| 30 | 1,12 | -0,20 | Satisfactory |
| 39 | 1,14 | -0,15 | Satisfactory |
| 27 | 1,17 | -0,077 | Satisfactory |
| 2 | 1,19 | -0,02 | Satisfactory |
| 13 | 1,2 | 0 | Satisfactory |
| 22 | 1,2 | 0 | Satisfactory |
| 37 | 1,2 | 0 | Satisfactory |
| 9 | 1,25 | 0,13 | Satisfactory |
| 20 | 1,29 | 0,23 | Satisfactory |
| 3 | 1,3 | 0,26 | Satisfactory |
| 29 | 1,32 | 0,31 | Satisfactory |
| 5 | 1,36 | 0,41 | Satisfactory |

| Lab. | Amphetamine (ng/mg) | Z-score | Result |
|------|---------------------|---------|--------|
| 17 | 1,36 | 0,41 | Satisfactory |
| 23 | 1,4 | 0,51 | Satisfactory |
| 25 | 1,41 | 0,54 | Satisfactory |
| 4 | 1,42 | 0,56 | Satisfactory |
| 16 | 1,48 | 0,72 | Satisfactory |
| 7 | 1,5 | 0,77 | Satisfactory |
| 36 | 1,57 | 0,95 | Satisfactory |
| 10 | 1,8 | 1,54 | Satisfactory |
| 40 | 2,02 | 2,10 | Questionable |
| 1 | 2,89 | 4,33 | Unsatisfactory |
| 41 | 6,33 | 13,15 | Unsatisfactory |
| 19 | NA | | |
| 21 | NA | | |
| 11 | P | | |
| 32 | P | | |

| | |
|------------|-------|
| Average | 1,33 |
| SD | 0,94 |
| CV% | 70,67 |
| Median | 1,2 |
| Minimum | 0,3 |
| Quartile 25 | 1,01 |
| Quartile 75 | 1,4 |
| Maximum | 6,33 |
| Iqr | 0,39 |

Methamphetamine - Sample C
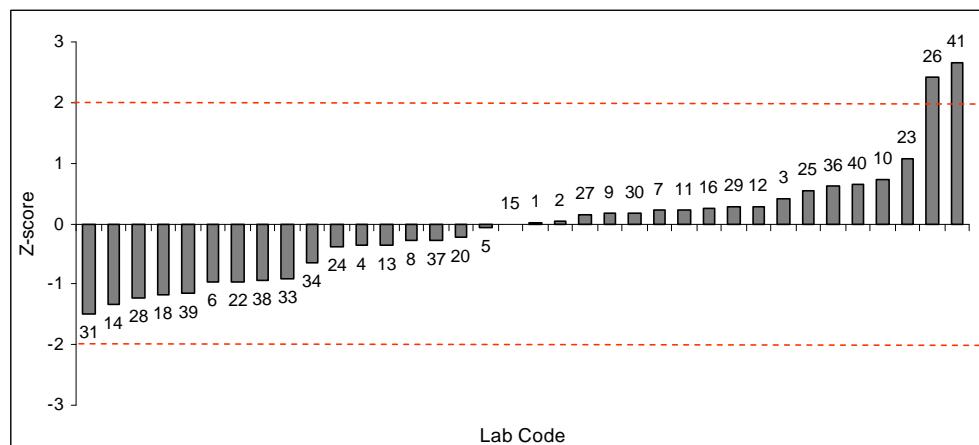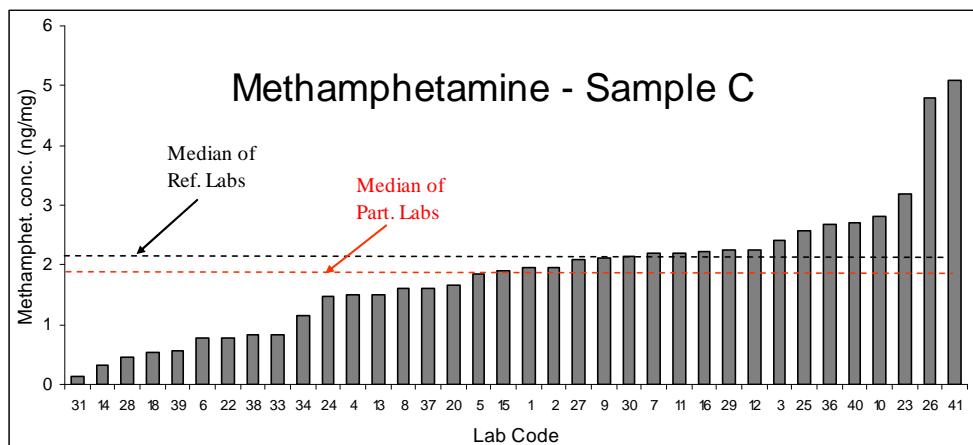
| Lab. | Methamphet. (ng/mg) | Z-score | Result |
|------|---------------------|---------|--------|
| 31 | 0,14 | -1,5 | Satisfactory |
| 14 | 0,33 | -1,34 | Satisfactory |
| 28 | 0,45 | -1,24 | Satisfactory |
| 18 | 0,53 | -1,17 | Satisfactory |
| 39 | 0,55 | -1,15 | Satisfactory |
| 6 | 0,78 | -0,96 | Satisfactory |
| 22 | 0,79 | -0,95 | Satisfactory |
| 38 | 0,82 | -0,93 | Satisfactory |
| 33 | 0,83 | -0,92 | Satisfactory |
| 34 | 1,14 | -0,66 | Satisfactory |
| 24 | 1,46 | -0,39 | Satisfactory |
| 4 | 1,49 | -0,36 | Satisfactory |
| 13 | 1,5 | -0,36 | Satisfactory |
| 8 | 1,6 | - | Satisfactory |
| 37 | 1,6 | -0,27 | Satisfactory |
| 20 | 1,67 | -0,21 | Satisfactory |
| 5 | 1,84 | -0,07 | Satisfactory |
| 15 | 1,9 | -0,02 | Satisfactory |
| 1 | 1,95 | 0,02 | Satisfactory |
| 2 | 1,96 | 0,03 | Satisfactory |
| 27 | 2,1 | 0,15 | Satisfactory |
| 9 | 2,12 | 0,16 | Satisfactory |
| 30 | 2,14 | 0,18 | Satisfactory |
| 7 | 2,2 | 0,23 | Satisfactory |
| 11 | 2,2 | 0,23 | Satisfactory |
| 16 | 2,22 | 0,25 | Satisfactory |

| Lab. | Methamphet (ng/mg) | Z-score | Result |
|------|--------------------|---------|--------|
| 29 | 2,25 | 0,27 | Satisfactory |
| 12 | 2,26 | 0,28 | Satisfactory |
| 3 | 2,4 | 0,40 | Satisfactory |
| 25 | 2,58 | 0,55 | Satisfactory |
| 36 | 2,67 | 0,63 | Satisfactory |
| 40 | 2,71 | 0,66 | Satisfactory |
| 10 | 2,8 | 0,73 | Satisfactory |
| 23 | 3,2 | 1,07 | Satisfactory |
| 26 | 4,79 | 2,41 | Questionable |
| 41 | 5,08 | 2,65 | Questionable |
| 35 | N | | |
| 17 | NA | | |
| 19 | NA | | |
| 21 | NA | | |
| 32 | P | | |

| | |
|------------|-------|
| Average | 1,86 |
| SD | 1,07 |
| CV% | 57,34 |
| Median | 1,92 |
| Minimum | 0,14 |
| Quartile 25 | 1,06 |
| Quartile 75 | 2,25 |
| Maximum | 5,08 |
| Iqr | 1,19 |

MDMA - Sample C
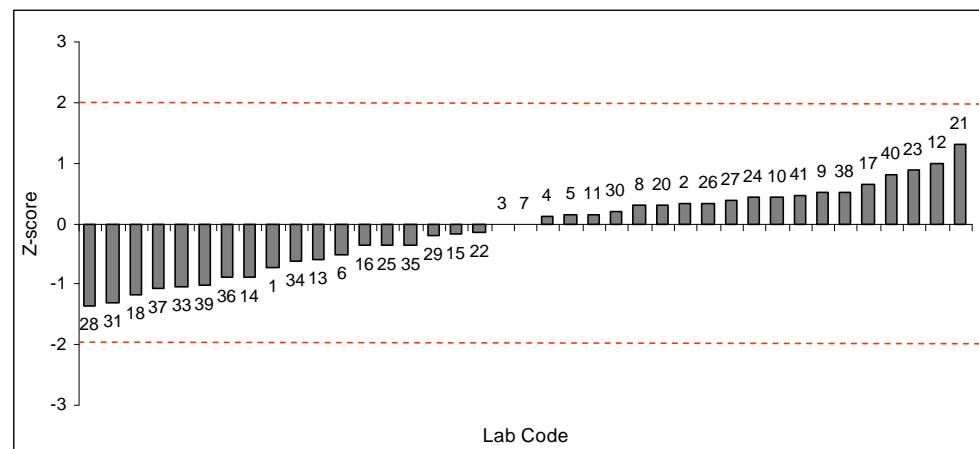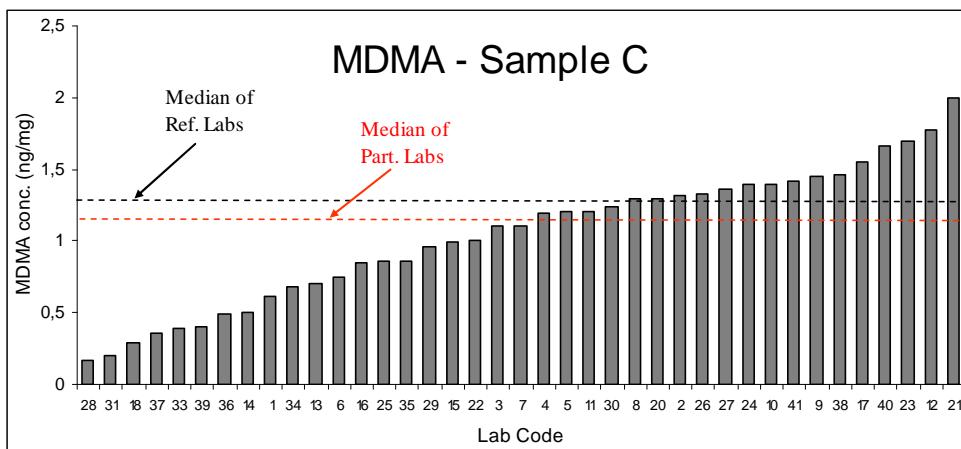
| Lab. | MDMA (ng/mg) | Z-score | Result |
|------|--------------|---------|--------|
| 28 | 0,17 | -1,36 | Satisfactory |
| 31 | 0,2 | -1,31 | Satisfactory |
| 18 | 0,29 | -1,18 | Satisfactory |
| 37 | 0,36 | -1,08 | Satisfactory |
| 33 | 0,39 | -1,04 | Satisfactory |
| 39 | 0,4 | -1,02 | Satisfactory |
| 36 | 0,49 | -0,89 | Satisfactory |
| 14 | 0,5 | -0,87 | Satisfactory |
| 1 | 0,61 | -0,71 | Satisfactory |
| 34 | 0,68 | -0,61 | Satisfactory |
| 13 | 0,7 | -0,58 | Satisfactory |
| 6 | 0,75 | -0,51 | Satisfactory |
| 16 | 0,85 | -0,36 | Satisfactory |
| 25 | 0,86 | -0,35 | Satisfactory |
| 35 | 0,86 | -0,35 | Satisfactory |
| 29 | 0,96 | -0,20 | Satisfactory |
| 15 | 0,99 | -0,16 | Satisfactory |
| 22 | 1 | -0,14 | Satisfactory |
| 3 | 1,1 | 0 | Satisfactory |
| 7 | 1,1 | 0 | Satisfactory |
| 4 | 1,19 | 0,13 | Satisfactory |
| 5 | 1,2 | 0,14 | Satisfactory |
| 11 | 1,2 | 0,14 | Satisfactory |
| 30 | 1,24 | 0,20 | Satisfactory |
| 8 | 1,3 | 0,29 | Satisfactory |
| 20 | 1,3 | 0,29 | Satisfactory |

| Lab. | MDMA (ng/mg) | Z-score | Result |
|------|--------------|---------|--------|
| 2 | 1,32 | 0,32 | Satisfactory |
| 26 | 1,33 | 0,33 | Satisfactory |
| 27 | 1,36 | 0,38 | Satisfactory |
| 24 | 1,39 | 0,42 | Satisfactory |
| 10 | 1,4 | 0,44 | Satisfactory |
| 41 | 1,42 | 0,47 | Satisfactory |
| 9 | 1,45 | 0,51 | Satisfactory |
| 38 | 1,46 | 0,52 | Satisfactory |
| 17 | 1,55 | 0,66 | Satisfactory |
| 40 | 1,66 | 0,82 | Satisfactory |
| 23 | 1,7 | 0,88 | Satisfactory |
| 12 | 1,77 | 0,98 | Satisfactory |
| 21 | 2 | 1,31 | Satisfactory |
| 19 | NA | | |
| 32 | P | | |

| | |
|---|---|
| Average | 1,04 |
| SD | 0,46 |
| CV% | 44,52 |
| Median | 1,1 |
| Minimum | 0,17 |
| Quartile 25 | 0,69 |
| Quartile 75 | 1,37 |
| Maximum | 2 |
| Iqr | 0,68 |

THC - Sample C
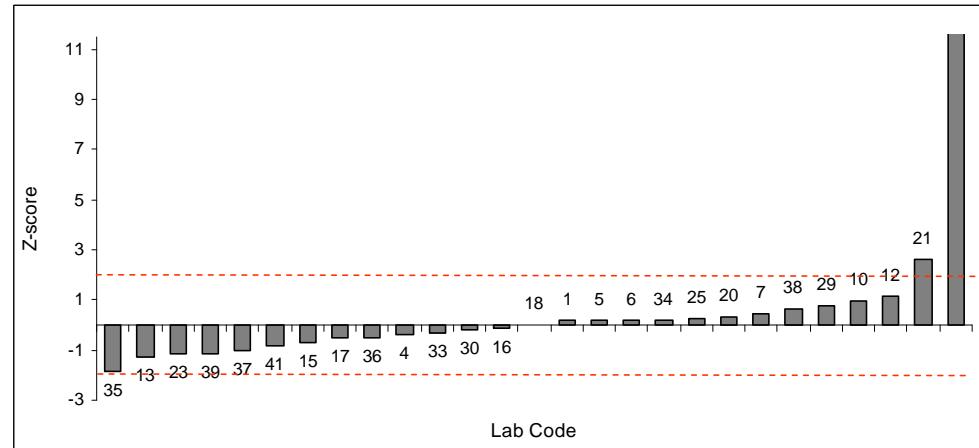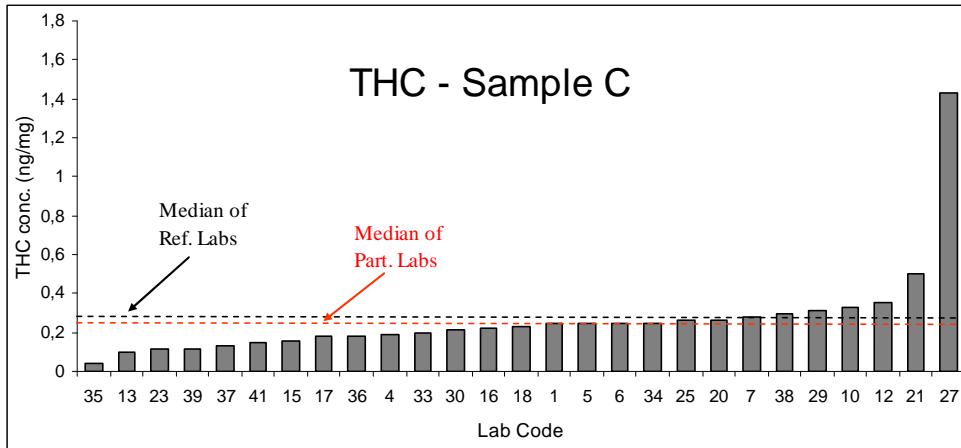
| Lab. | THC (ng/mg) | Z-score | Result |
|------|-------------|---------|--------------|
| 35 | 0,04 | -1,87 | Satisfactory |
| 13 | 0,1 | -1,29 | Satisfactory |
| 23 | 0,112 | -1,17 | Satisfactory |
| 39 | 0,117 | -1,12 | Satisfactory |
| 37 | 0,13 | -0,99 | Satisfactory |
| 41 | 0,15 | -0,8 | Satisfactory |
| 15 | 0,16 | -0,70 | Satisfactory |
| 17 | 0,18 | -0,51 | Satisfactory |
| 36 | 0,18 | -0,51 | Satisfactory |
| 4 | 0,19 | -0,41 | Satisfactory |
| 33 | 0,2 | -0,31 | Satisfactory |
| 30 | 0,21 | -0,21 | Satisfactory |
| 16 | 0,22 | -0,12 | Satisfactory |
| 18 | 0,232 | 0 | Satisfactory |
| 1 | 0,25 | 0,17 | Satisfactory |
| 5 | 0,25 | 0,17 | Satisfactory |
| 6 | 0,25 | 0,17 | Satisfactory |
| 34 | 0,25 | 0,17 | Satisfactory |
| 25 | 0,26 | 0,27 | Satisfactory |
| 20 | 0,265 | 0,32 | Satisfactory |
| 7 | 0,28 | 0,47 | Satisfactory |
| 38 | 0,3 | 0,66 | Satisfactory |
| 29 | 0,309 | 0,75 | Satisfactory |
| 10 | 0,33 | 0,95 | Satisfactory |
| 12 | 0,35 | 1,15 | Satisfactory |
| 21 | 0,5 | 2,61 | Questionable |

| Lab. | THC (ng/mg) | Z-score | Result |
|------|-------------|---------|----------------|
| 27 | 1,43 | 11,69 | Unsatisfactory |
| 28 | N | | |
| 19 | N | | |
| 31 | N | | |
| 2 | NA | | |
| 3 | NA | | |
| 8 | NA | | |
| 9 | NA | | |
| 11 | NA | | |
| 14 | NA | | |
| 22 | NA | | |
| 24 | NA | | |
| 26 | NA | | |
| 40 | NA | | |
| 32 | P | | |

| | |
|-------------|-------|
| Average | 0,27 |
| SD | 0,24 |
| CV% | 91,40 |
| Median | 0,23 |
| Minimum | 0,04 |
| Quartile 25 | 0,17 |
| Quartile 75 | 0,27 |
| Maximum | 1,43 |
| Iqr | 0,10 |