



ETHYL GLUCURONIDE –

PROFICIENCY TESTING

PROGRAM 2018

EtG-Proficiency Test 2018-1

- Registration on website: April/May 2018
- Samples shipped by IRM Zurich: 24.05.2018
- Analysis period:
 - 1st round June 2018 (31 of 35 labs)
- Statistics obtained from the BAM:
 - 1st round 25.06.2018
- Certificates sent:
 - 1st round 17.07.2018

Samples

- 3 authentic samples
100 mg per sample
- Washed and cut
- Homogeneity tested at IRM Zurich
- At least 25 mg recommended for analysis
- Labs should perform analysis according to their routine method



PROFICIENCY TEST	
ETHYL GLUCURONIDE	PT 2015
Instructions	09/2015

A. Introduction	Deadline of result submission: Oct 31st 2015
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Dear Participants,
On behalf of the Society of Hair Testing (SoHT), the Center of Forensic Hair Analysis Zurich is organizing the 8th proficiency test for ethyl glucuronide (EIG) in co-operation with the BAM (Federal Institute for Materials, Research and Testing).

B. Co-operation partners



Federal Institute for Materials Research and Testing (BAM)
Division 1.2 "Organic Chemical Analysis; Reference Materials"
Richard-Wilms-Strasse 11
D-12489 Berlin (Germany)
www.bam.de

Being a competence centre for analytical chemistry, the department provides information and advice with respect to all questions of reliability, truthness and precision of analytical methods, and to quality assurance and quality control in the chemical-analytical laboratory. The results of the department's research and development activities are incorporated into international (ISO, CEN) and national (DIN, VDI) standardization and regulation.

C. Contact for request (email preferable)
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Organization Delivery of samples Data Reporting Form ↓ Dr. Markus Baumgartner markus.baumgartner@irm.uzh.ch Fax: +41 (0)44 635 76 12 Center for Forensic Hair Analysis Kurvenstrasse 17 CH-8006 Zürich Switzerland	EtG Proficiency Testing Supervision Submission of results PT-evaluation Certificates of participation ↓ Dr. Frank Sporkert Frank.Sporkert@chuv.ch Fax: +41 (0)21 314 7329 University Center of Legal Medicine Unit of Forensic Toxicology Chemin de la Vuilleite 4 CH-1000 Lausanne 25 Switzerland
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Statistics 2018-1

- 32 results submitted
- Lab experiences:
 - > 500 analyses/year: 14 labs
 - 50-500 analyses/year: 10 labs
 - < 50 analyses/year: 8 labs
- Pulverization: 17 labs
- Incubation/extraction: water 25 labs, water and MeOH and/or ACN 4 labs, MeOH 1 lab
- Measurement:
 - LC-MS/MS: 27 labs, GC-MS/MS: 5 labs



PROFICIENCY TEST	
ETG	PT 2015
Result form	Oct 31 st 2015

ETHYL GLUCURONIDE PROFICIENCY TEST 2015

1 Laboratory experience

1.1 Previous participation in inter-laboratory comparisons?

YES NO

1.2 The method used is validated?

YES NO

1.3 Forensic Lab accreditation for this analysis?

YES NO

1.4 Number of analyzed samples ETG in hair per year?

< 50 50-300 > 300

2 Quantification

2.1 Hair EtG concentration determined according to your routinely performed method

Your Lab Code	EtG concentration in pg/mg		
	HEIG 15/1-A	HEIG 15/1-B	HEIG 15/1-C

3 Measurement conditions

3.1 Sample amount per analysis [mg - average]

Average sample amount in mg		
HEIG 15/1-A	HEIG 15/1-B	HEIG 15/1-C

EtG-Results

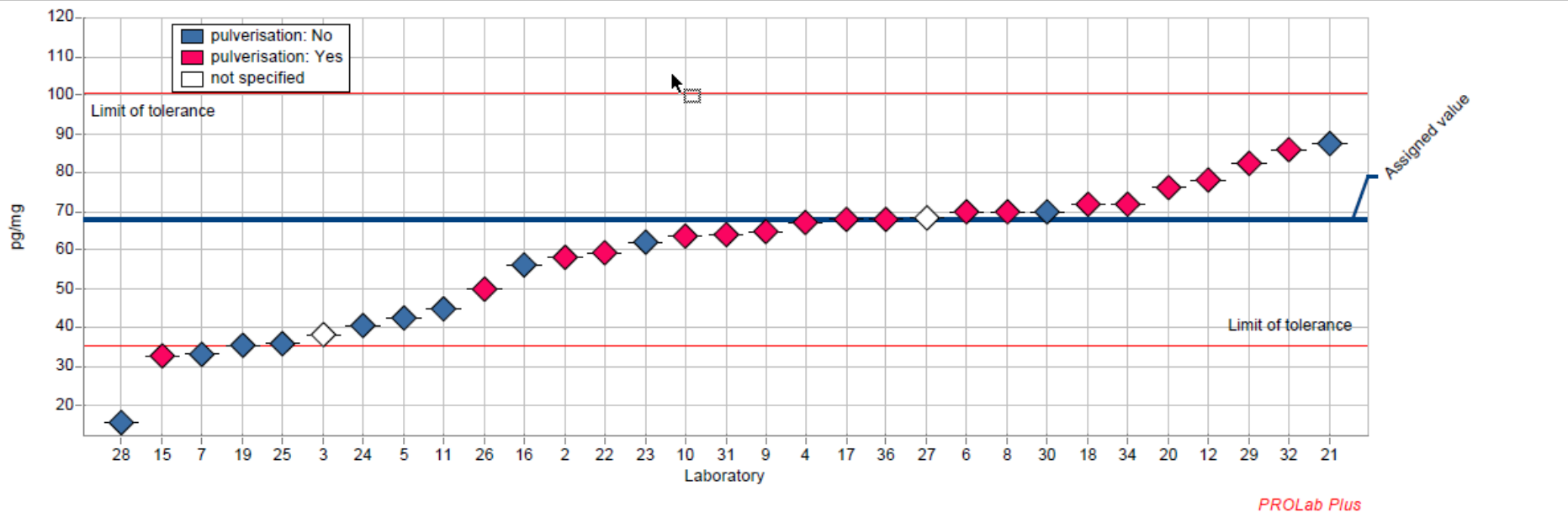
- Data treatment according to ISO-5725-5 (with PROLab Plus software)
- Acceptance criteria: Horwitz Z-score ≤ 2 (robust mean of results for all samples)
- Only the results obtained after pulverisation have been considered for the calculation of the target value
- Still more than 1/3 of the labs do not powder the hair

SAMPLE HEtG 2018/1-A

SoHT Proficiency Test EtG 2018/1

Summary results

Sample:	HEtG 18/1-A	Assigned value:	67,898 pg/mg (Reference value)
Measurand:	EtG	Target s.d.:	16,282 pg/mg (Horwitz function)
Statistical method:	ISO 5725-5	Rel. target s.d.:	23,98% (Horwitz function)
Number of laboratories in calculation:	31	Range of tolerance:	35,334 - 100,462 pg/mg ($ Z\text{-Score} \leq 2,000$)



Assigned value **A: 67.9 pg/mg** (accepted range **Horwitz 35.3 – 100 pg/mg**)

Target SD: 24.0 %

28 of 31 results within the tolerance criteria

Assigned value **A: 67.9 pg/mg** (accepted range **+/- 30% 47.5 – 88.3 pg/mg**)

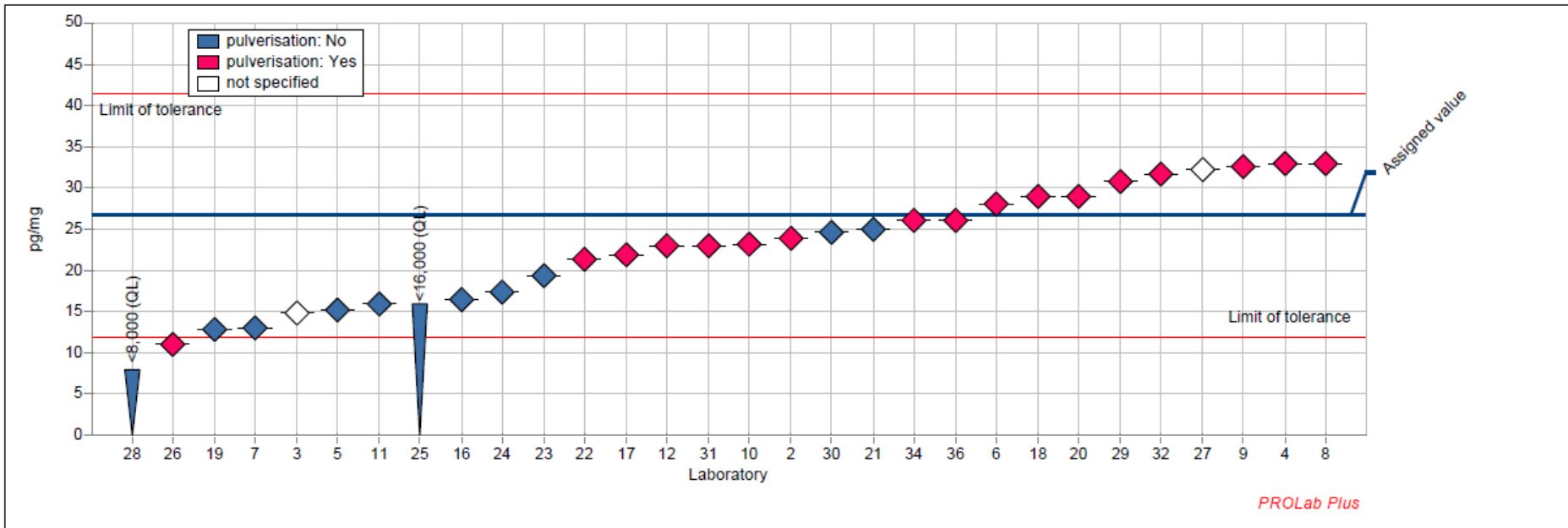
22 of 31 results within the tolerance criteria

SAMPLE HEtG 2018/1-B

SoHT Proficiency Test EtG 2018/1

Summary results

Sample:	HEtG 18/1-B	Assigned value:	26,746 pg/mg (Reference value)
Measurand:	EtG	Target s.d.:	7,379 pg/mg (Horwitz function)
Statistical method:	ISO 5725-5	Rel. target s.d.:	27,59% (Horwitz function)
Number of laboratories in calculation:	28	Range of tolerance:	11,988 - 41,504 pg/mg ($ Z\text{-Score} \leq 2,000$)



Assigned value **B**: 26.7 pg/mg (accepted range Horwitz 12.0 – 41.5 pg/mg)

Target SD: 27.6 %

26 of 28 results within the tolerance criteria (2 labs reported concentrations lower their LOQ)

Assigned value **A**: 26.7 pg/mg (accepted range +/- 30% 18.7 – 34.8 pg/mg)

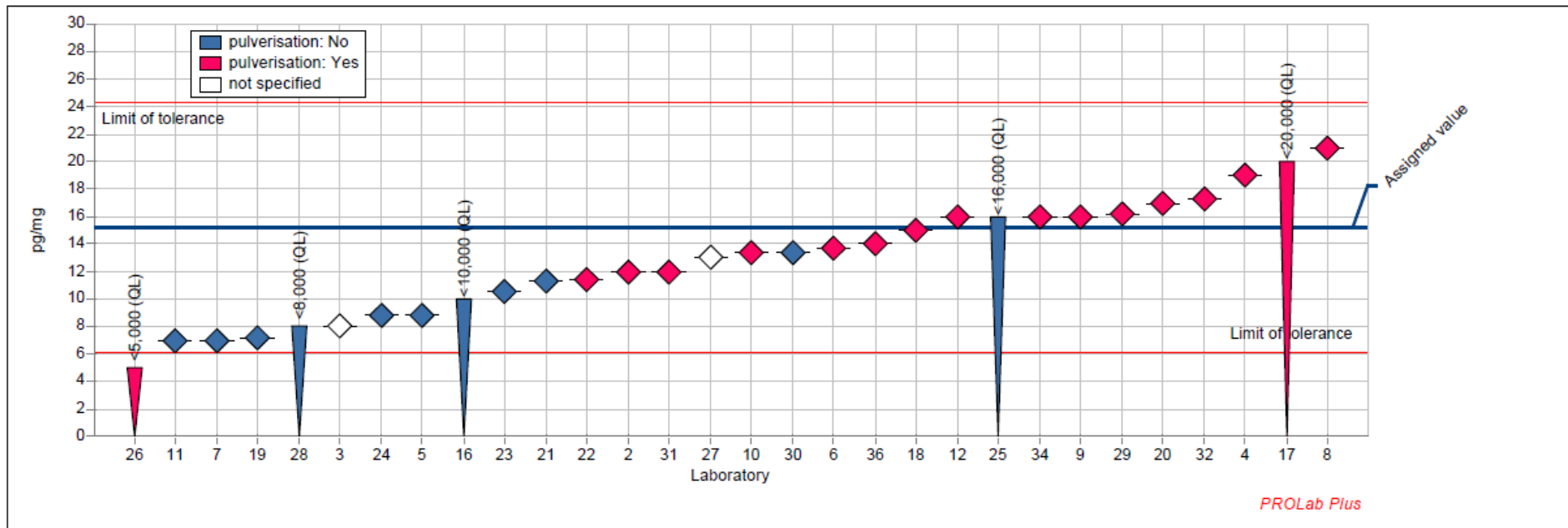
20 of 28 results within the tolerance criteria

SAMPLE HEtG 2018/1-C

SoHT Proficiency Test EtG 2018/1

Summary results

Sample:	HEtG 18/1-C	Assigned value:	15,227 pg/mg (Reference value)
Measurand:	EtG	Target s.d.:	4,573 pg/mg (Horwitz function)
Statistical method:	ISO 5725-5	Rel. target s.d.:	30,03% (Horwitz function)
Number of laboratories in calculation:	25	Range of tolerance:	6,082 - 24,372 pg/mg ($ Z\text{-Score} \leq 2,000$)



Assigned value **C: 15.2 pg/mg** (accepted range **Horwitz: 6.08 – 24.4 pg/mg**)

Target SD: 30.0 %

24 of 25 results within the tolerance criteria (5 labs reported concentrations lower their LOQ)

Assigned value **C: 15.2 pg/mg** (accepted range **+/-30%: 10.7 – 19.8 pg/mg**)

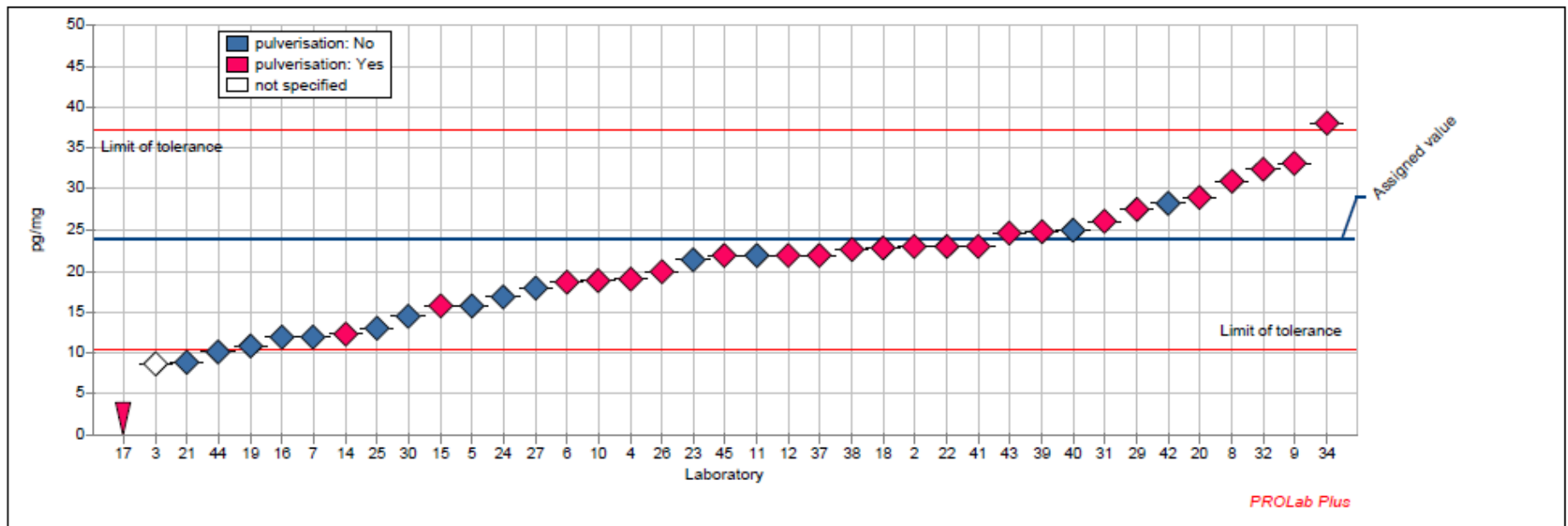
17 of 28 results within the tolerance criteria (5 labs reported concentrations lower their LOQ)

SAMPLE HEtG 2018/2-A

SoHT Proficiency Test EtG 2018/2

Summary results

Sample:	HEtG 18/2-A	Assigned value:	23.834 pg/mg (Reference value)
Measurand:	EtG	Target s.d.:	6.691 pg/mg (Horwitz function)
Statistical method:	ISO 5725-5	Rel. target s.d.:	28.07% (Horwitz function)
Number of laboratories in calculation:	38	Range of tolerance:	10.453 - 37.215 pg/mg ($ Z\text{-Score} \leq 2.0$)



Assigned value **A: 23.8 pg/mg** (accepted range **Horwitz 10.5 – 23.8 pg/mg**)

Target SD: 28.1 %

34 of 38 results within the tolerance criteria

Assigned value **A: 23.8 pg/mg** (accepted range **+/- 30% 16.6 – 31.0 pg/mg**)

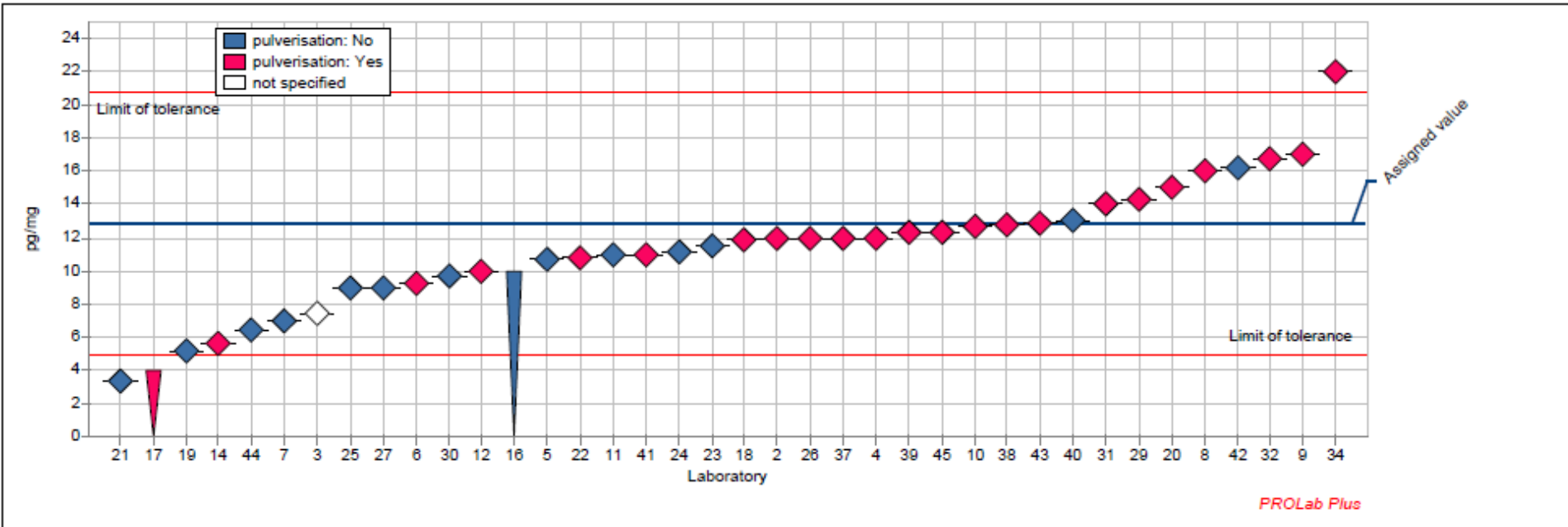
23 of 38 results within the tolerance criteria

SAMPLE HEtG 2018/2-B

SoHT Proficiency Test EtG 2018/2

Summary results

Sample:	HEtG 18/2-B	Assigned value:	12.840 pg/mg (Reference value)
Measurand:	EtG	Target s.d.:	3.956 pg/mg (Horwitz function)
Statistical method:	ISO 5725-5	Rel. target s.d.:	30.81% (Horwitz function)
Number of laboratories in calculation:	36	Range of tolerance:	4.928 - 20.752 pg/mg ($ Z\text{-Score} \leq 2.0$)



Assigned value **A: 12.8 pg/mg** (accepted range **Horwitz 4.9 – 20.8 pg/mg**)

Assigned value **A: 12.8 pg/mg** (accepted range **+/- 30% 8.9 – 16.7 pg/mg**)

Target SD: 30.8 %

28 of 38 results within the tolerance criteria

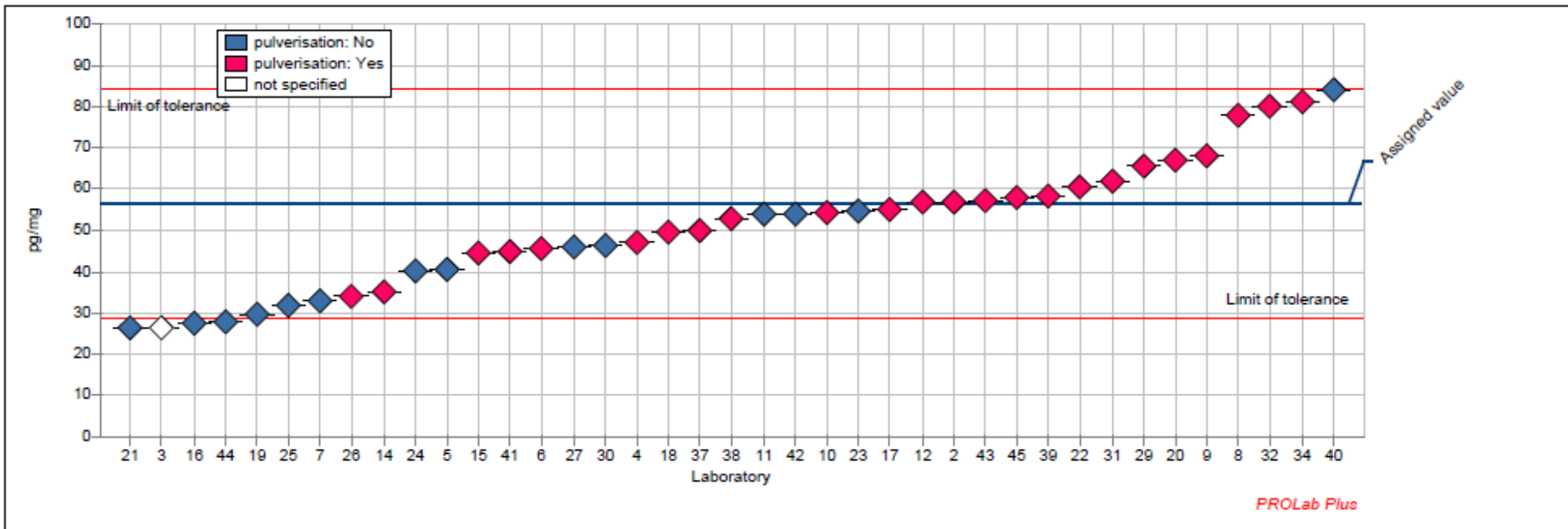
35 of 38 results within the tolerance criteria

SAMPLE HEtG 2018/2-C

SoHT Proficiency Test EtG 2018/2

Summary results

Sample:	HEtG 18/2-C	Assigned value:	56.488 pg/mg (Reference value)
Measurand:	EtG	Target s.d.:	13.926 pg/mg (Horwitz function)
Statistical method:	ISO 5725-5	Rel. target s.d.:	24.65% (Horwitz function)
Number of laboratories in calculation:	39	Range of tolerance:	28.636 - 84.340 pg/mg ($ Z\text{-Score} \leq 2.0$)



Assigned value **A: 56.5 pg/mg** (accepted range **Horwitz 28.6 – 84.3 pg/mg**)

Assigned value **A: 56.5 pg/mg** (accepted range **+/- 30% 39.5 – 73.5 pg/mg**)

Target SD: 24.7 %

26 of 39 results within the tolerance criteria

35 of 39 results within the tolerance criteria

EtG-Proficiency Test 2018-2

- Registration on website: April/May and October 2018
- Samples shipped by IRM Zurich: 28.10.2018
- Analysis period:
 - 2st round November 2018 (40 of 45 labs)
- Statistics obtained from the BAM:
 - 2st round 17.12.2018
- Certificates sent:
 - 2st round 28.12.2018

Samples

- 3 authentic samples
100 mg per sample
- Washed and cut
- Homogeneity tested at IRM Zurich
- At least 25 mg recommended for analysis
- Labs should perform analysis according to their routine method



PROFICIENCY TEST	
ETHYL GLUCURONIDE	PT 2015
Instructions	09/2015

A. Introduction	Deadline of result submission: Oct 31st 2015
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Dear Participants,
On behalf of the Society of Hair Testing (SoHT), the Center of Forensic Hair Analysis Zurich is organizing the 8th proficiency test for ethyl glucuronide (EIG) in co-operation with the BAM (Federal Institute for Materials, Research and Testing).

B. Co-operation partners



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C. Contact for request (email preferable)
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Organization Delivery of samples Data Reporting Form ↓ Dr. Markus Baumgartner markus.baumgartner@irm.uzh.ch Fax: +41 (0)44 635 76 12 Center for Forensic Hair Analysis Kurvenstrasse 17 CH-8006 Zürich Switzerland	EtG Proficiency Testing Supervision Submission of results PT-evaluation Certificates of participation ↓ Dr. Frank Sporkert Frank.Sporkert@chuv.ch Fax: +41 (0)21 314 7329 University Center of Legal Medicine Unit of Forensic Toxicology Chemin de la Vuilleite 4 CH-1000 Lausanne 25 Switzerland
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Statistics 2018-2

- 39 results submitted
- Lab experiences:
 - > 500 analyses/year: 18 labs
 - 50-500 analyses/year: 13 labs
 - < 50 analyses/year: 8 labs
- Without pulverization: 15 labs
- Incubation/extraction: water 29 labs, water and MeOH and/or ACN 5 labs, MeOH 1 lab
- Measurement:
 - LC-MS/MS: 32 labs, GC-MS/MS: 7 labs



PROFICIENCY TEST	
ETG	PT 2015
Result form	Oct 31 st 2015

ETHYL GLUCURONIDE PROFICIENCY TEST 2015

1 Laboratory experience

1.1 Previous participation in inter-laboratory comparisons?

YES NO

1.2 The method used is validated?

YES NO

1.3 Forensic Lab accreditation for this analysis?

YES NO

1.4 Number of analyzed samples ETG in hair per year?

< 50 50-300 > 300

2 Quantification

2.1 Hair EtG concentration determined according to your routinely performed method

Your Lab Code	EtG concentration in pg/mg		
	HEIG 15/1-A	HEIG 15/1-B	HEIG 15/1-C

3 Measurement conditions

3.1 Sample amount per analysis [mg - average]

Average sample amount in mg		
HEIG 15/1-A	HEIG 15/1-B	HEIG 15/1-C

EtG-Results

- Data treatment according to ISO-5725-5 (with PROLab Plus software)
- Acceptance criteria: Horwitz Z-score ≤ 2 (robust mean of results for all samples)
- Only the results obtained after pulverisation have been considered for the calculation of the target value
- Still more than 1/3 of the labs do not powder the hair

Conclusions EtG-PT

- **Significantly lower recoveries in non powdered hair**
- **Still more than 30% of the labs don't pulverize hair**
- **Pulverizations is strongly recommended**
- **Narrowing the acceptance range (e.g. 30%) yields to a significantly higher number of non-conform values (almost all of them labs which don't pulverize)**
- **Significantly higher relatively standard deviations for non-pulverizing labs: 35 % compared to 23 % for pulverizing labs**



FAEE INTERLABORATORY

COMPARISON PROGRAM 2018

FAEE 2018

- Registration on website: April/May 2018
- Samples shipped by IRM Zurich: 24.05.2018
- Analysis period: 1st round June/July 2018 (6 labs)
- Statistics obtained from the CURML Lausanne:
 - 1st round 30.07.2018
- 2nd round registration until October 2018 (email to M. Uhl)
- Analysis period: 2nd round November-December 2018
- Statistics obtained from the CURML Lausanne:
 - 2nd round 12.02.2019

Samples

- 3 authentic cut hair samples
100 mg per sample
- At least 25 mg recommended for analysis
- Labs should perform analysis according to their routine method (no washing before analysis)
- Only FAEE 16:0 (ethyl palmitate) to analyze



INTERLABORATORY COMPARISON	
FATTY ACID ETHYL ESTERS	ILC 2018/1
Instructions	05/2018

A. Introduction	Deadline of result submission: JUNE 29 th 2018
<p>Dear Participants,</p> <p>On behalf of the Society of Hair Testing (SoHT), the Center of Forensic Hair Analysis Zurich is organizing the 2018 (round 1) interlaboratory comparison for fatty acid ethyl esters (FAEE).</p> <p>The data treatment will be provided by the SoHT. Only the quantitative result for the FAEE 16:0 will be used for the performance evaluation. A median value of $\pm 2 \times \text{IQR}$ ($Z \leq 2$) will be defined as decision criteria for considering the test result conform.</p>	

FAEE-Results 2018-1

5 of 6 labs submitted results

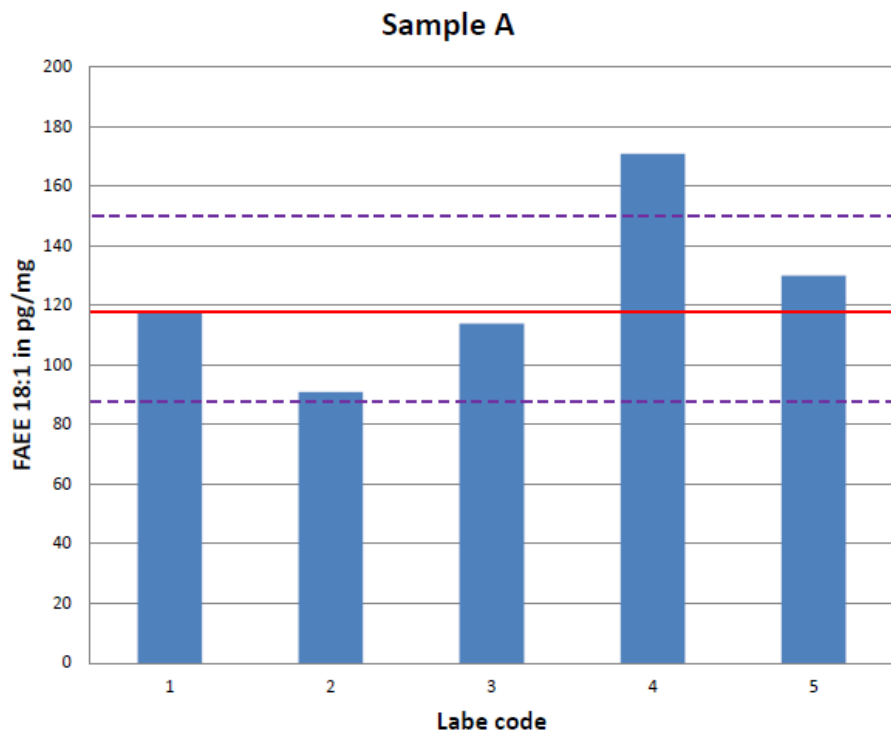
Acceptance criteria: Median +/- 2 x IQR

Sample A

Assigned value FAEE 16:0: 118 pg/mg

Accepted range: 86 – 150 pg/mg

4 of 5 within accepted range

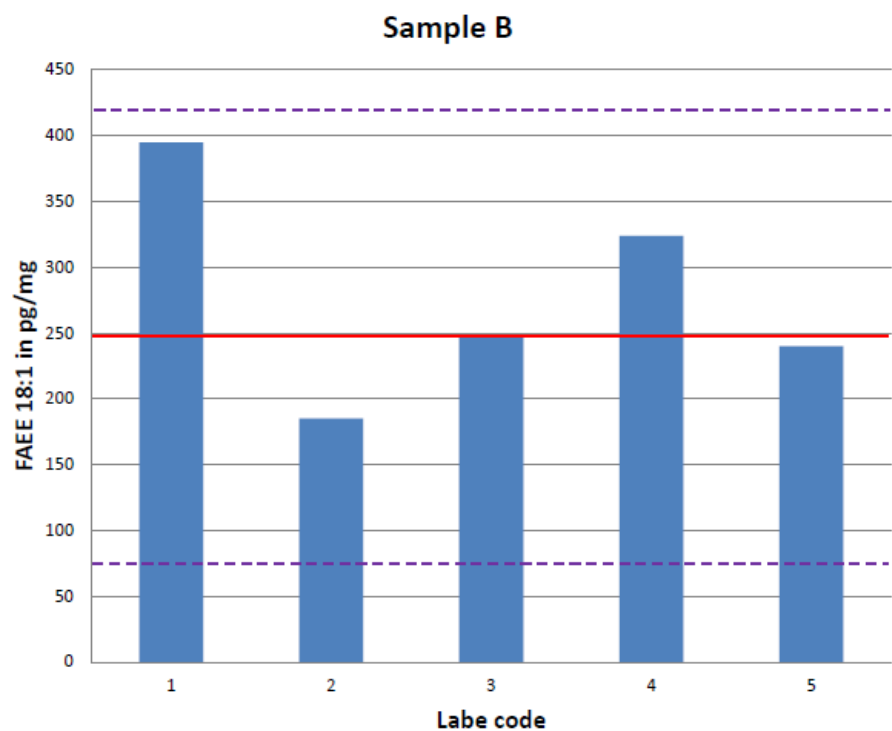


Sample B

Assigned value FAEE 16:0: 247 pg/mg

Accepted range: 79 – 415 pg/mg

5 of 5 within accepted range



FAEE-Results 2018-1

5 of 6 labs submitted results

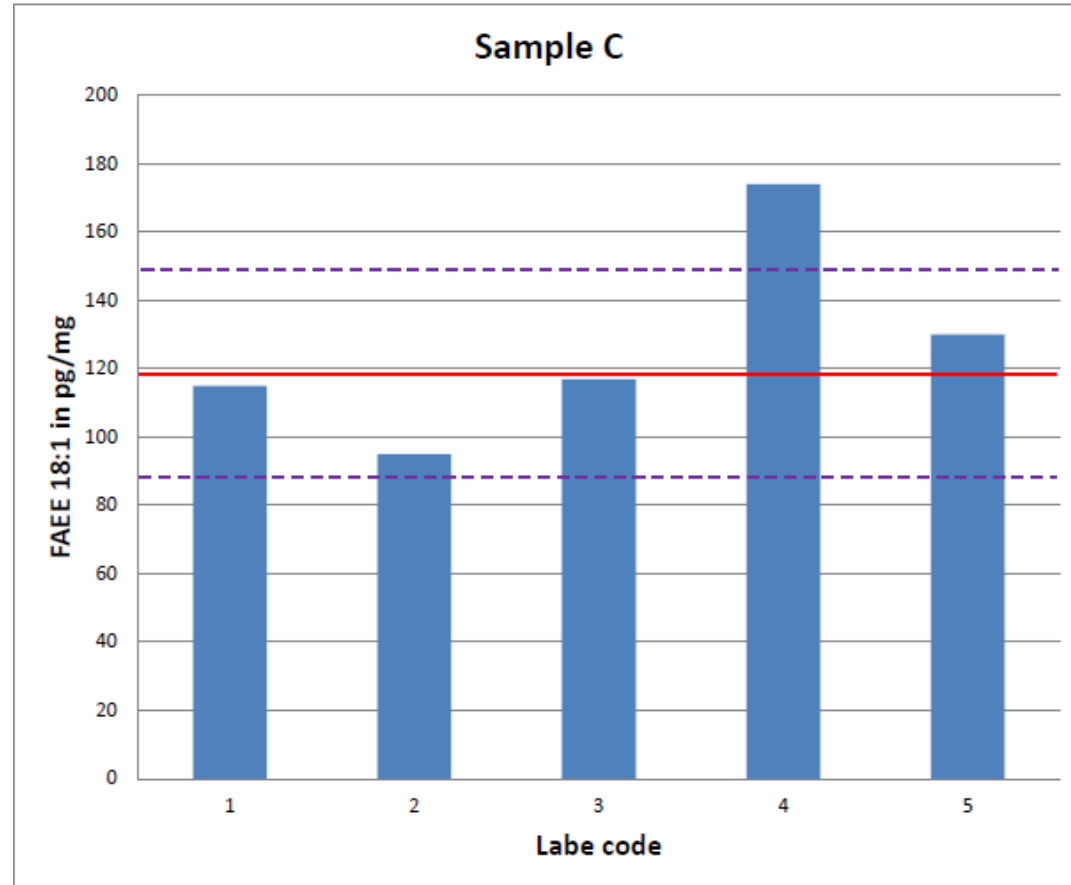
Acceptance criteria: Median +/- 2 x IQR

Sample C

Assigned value FAEE 16:0: 117 pg/mg

Accepted range: 87 – 147 pg/mg

4 of 5 within accepted range



FAEE-Results 2018-2

5 of 6 labs submitted results

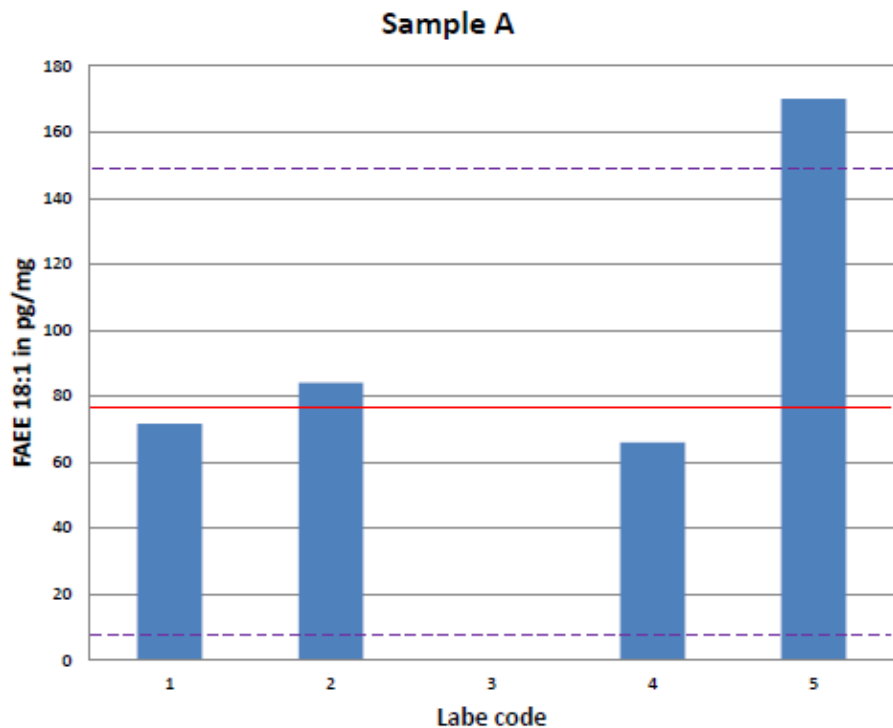
Acceptance criteria: Median +/- 2 x IQR

Sample A

Assigned value FAEE 16:0: 77.6 pg/mg

Accepted range: 7.2 – 148 pg/mg

4 of 5 within accepted range

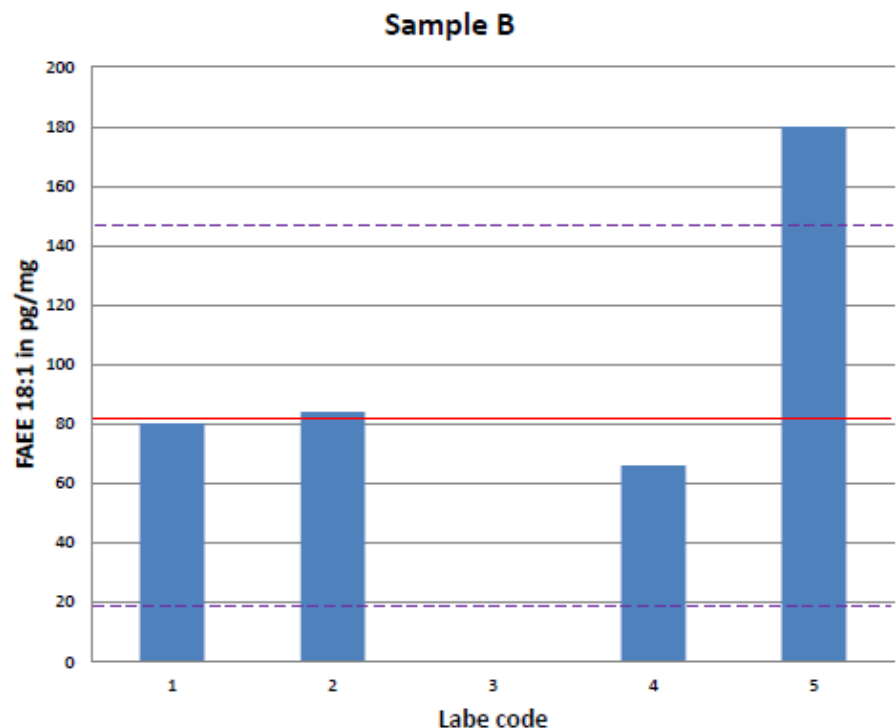


Sample B

Assigned value FAEE 16:0: 82.1 pg/mg

Accepted range: 19 – 145 pg/mg

5 of 5 within accepted range



FAEE-Results 2018-2

5 of 6 labs submitted results

Acceptance criteria: Median +/- 2 x IQR

Sample C

Assigned value FAEE 16:0: 128 pg/mg

Accepted range: 36 – 219 pg/mg

4 of 5 within accepted range

