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

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

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

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-Score| <= 2,000)	
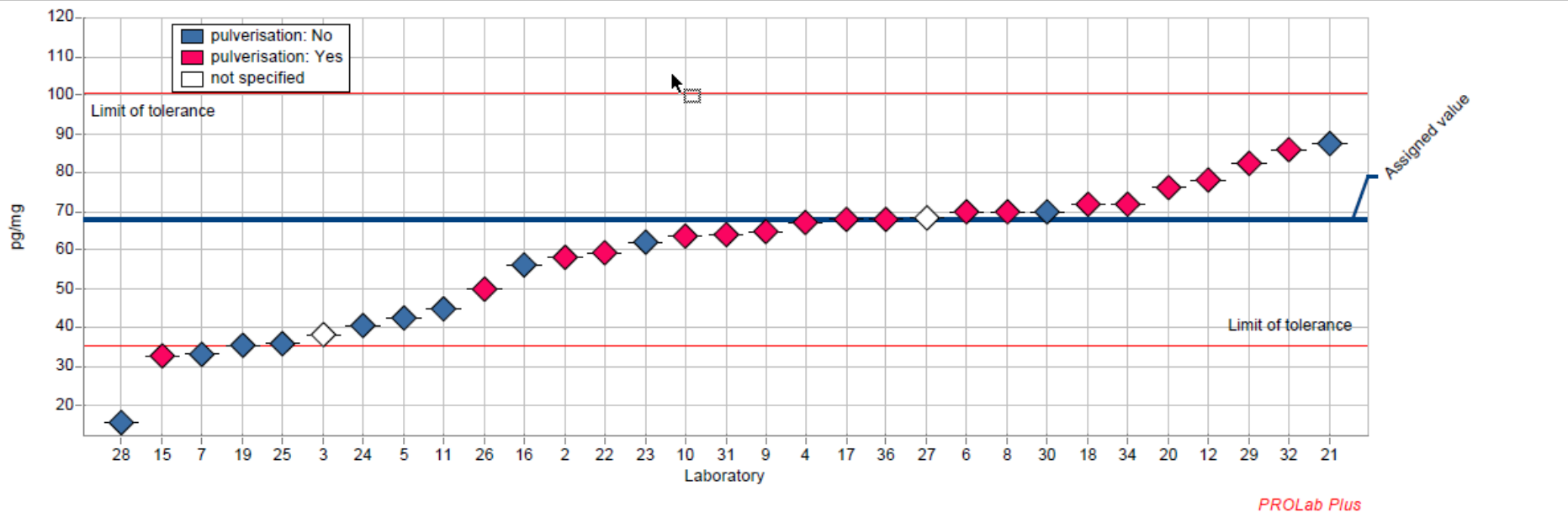
Assigned value **A: 67.9 pg/mg** (accepted range **Horwitz 35.3 – 100 pg/mg**)

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
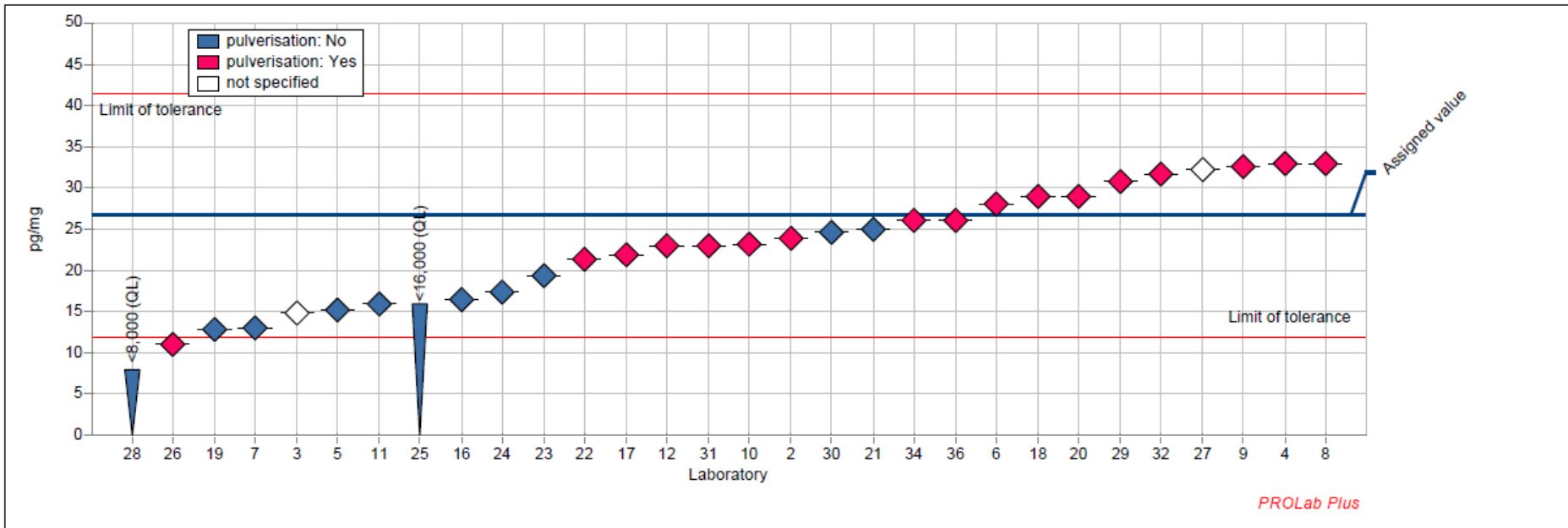
Summary results

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-Score| <= 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)

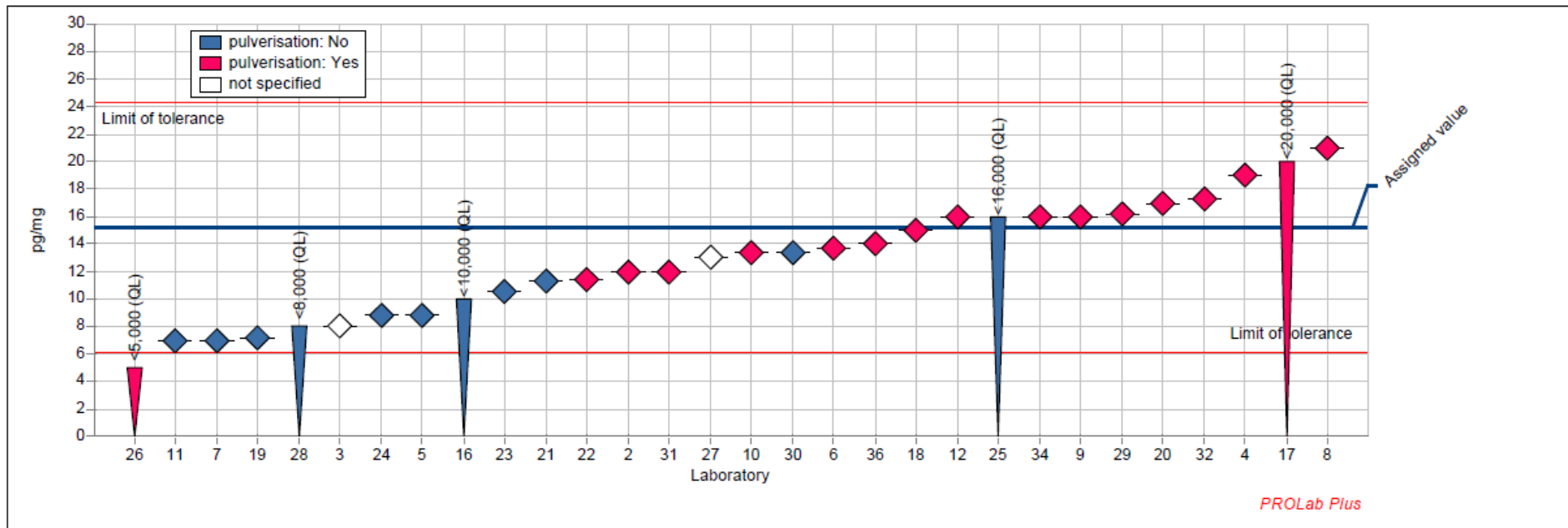Assigned value **A: 26.7 pg/mg** (accepted range **+/- 30% 18.7 – 34.8 pg/mg**)

20 of 28 results within the tolerance criteria

SAMPLE HEtG 2018/1-C

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-Score| <= 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**)
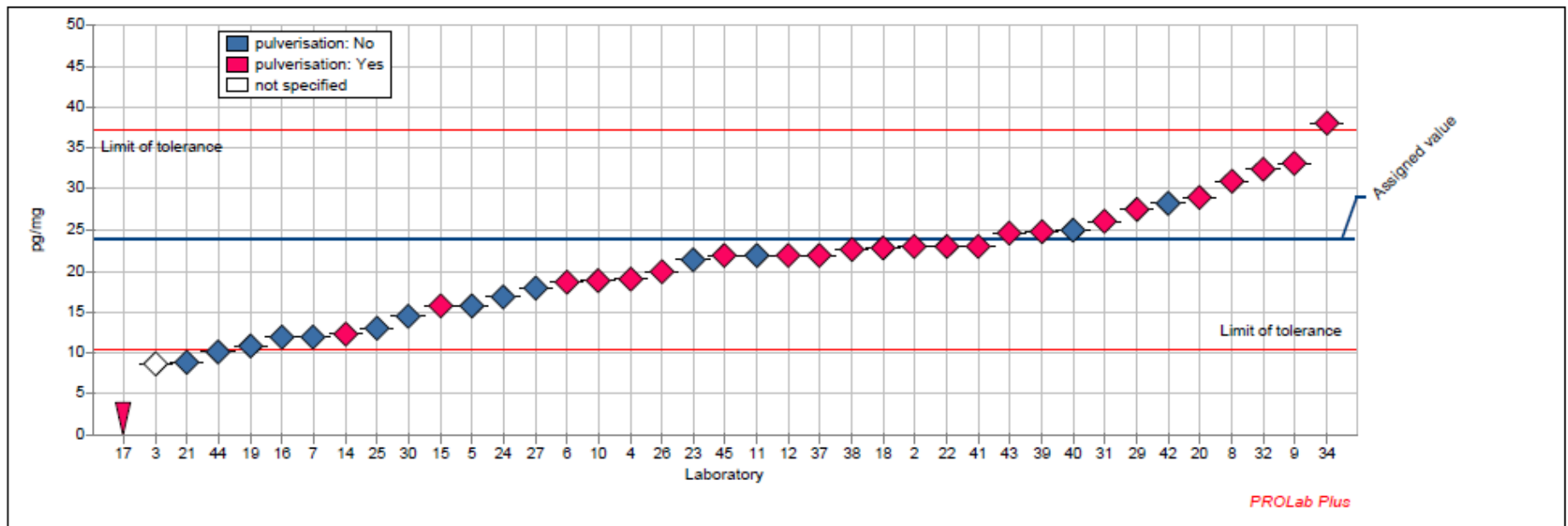
17 of 28 results within the tolerance criteria (5 labs reported concentrations lower their LOQ)

SAMPLE HEtG 2018/2-A

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-Score| <= 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

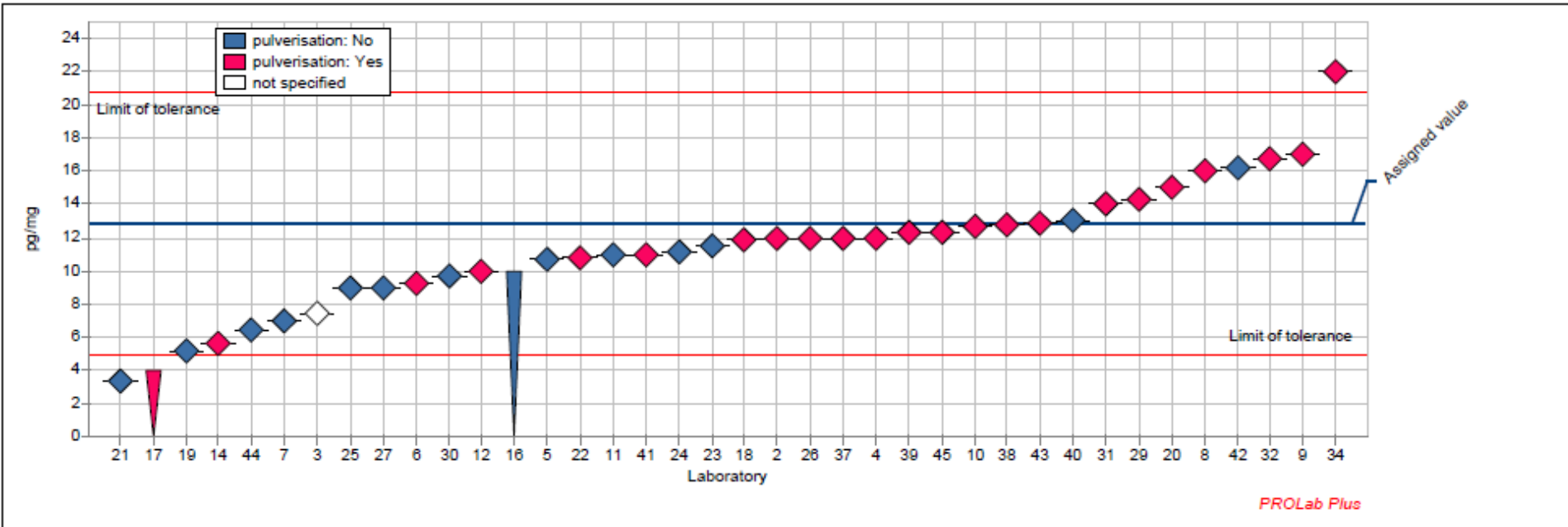Assigned value **A: 23.8 pg/mg** (accepted range **+/- 30% 16.6 – 31.0 pg/mg**)

23 of 38 results within the tolerance criteria

SAMPLE HEtG 2018/2-B

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-Score| <= 2.0)

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

Target SD: 30.8 %

35 of 38 results within the tolerance criteria

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

28 of 38 results within the tolerance criteria

SAMPLE HEtG 2018/2-C
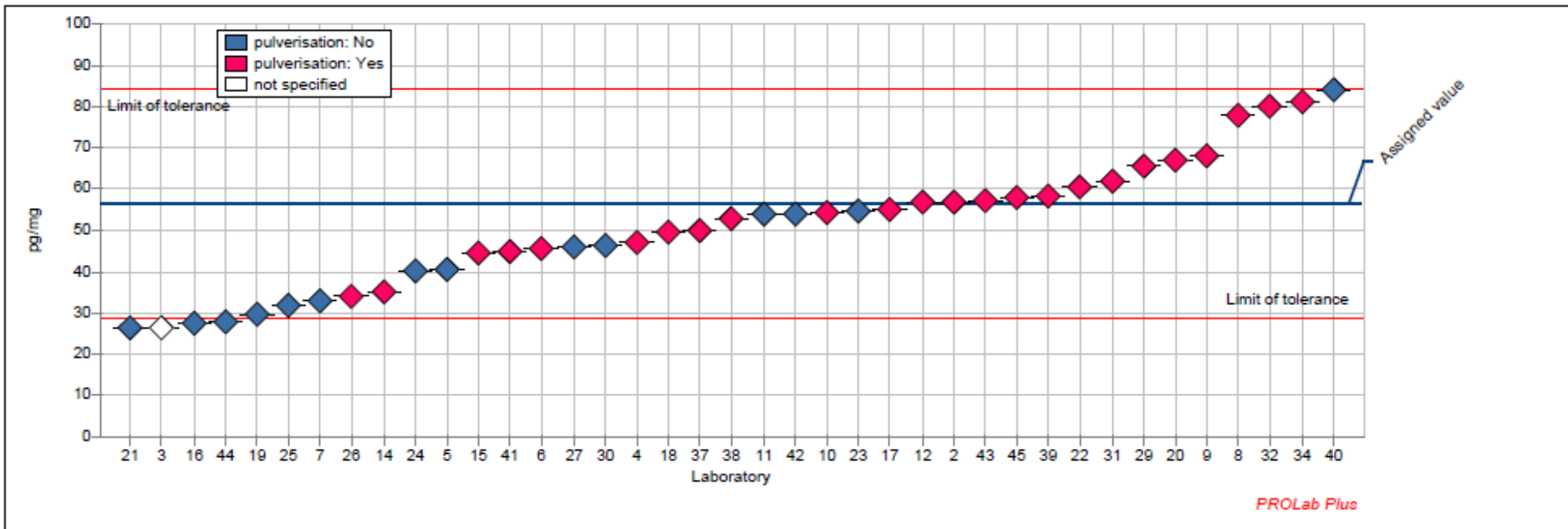
Summary results

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-Score| <= 2.0)	

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

Target SD: 24.7 %

35 of 39 results within the tolerance criteria

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

26 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

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

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

SOCIETY OF HAIR TESTING

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

A.	Introduction	Deadline of result submission:	JUNE 29th 2018

Dear Participants,

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).

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 +/- 2 x IQR (Z ≤ 2) will be defined as decision criteria for considering the test result conform.
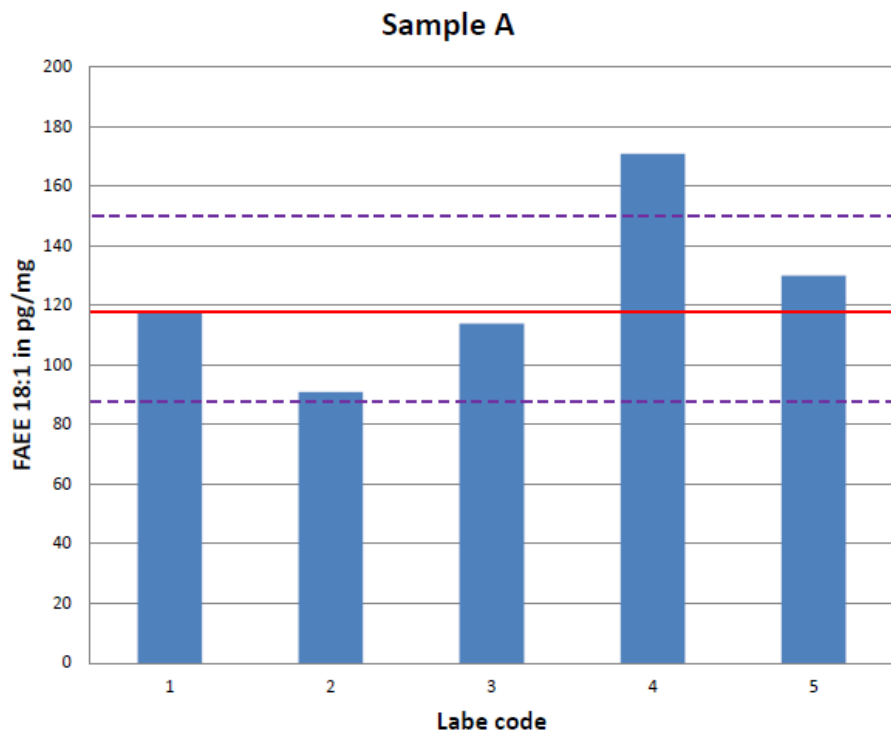
FAEE-Results 2018-1

5 of 6 labs submitted results
Acceptance criteria: Median +/- 2 x IQR

Sample A	**Sample B**
Assigned value FAEE 16:0: 118 pg/mg	Assigned value FAEE 16:0: 247 pg/mg
Accepted range: 86 – 150 pg/mg	Accepted range: 79 – 415 pg/mg
4 of 5 within accepted range	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
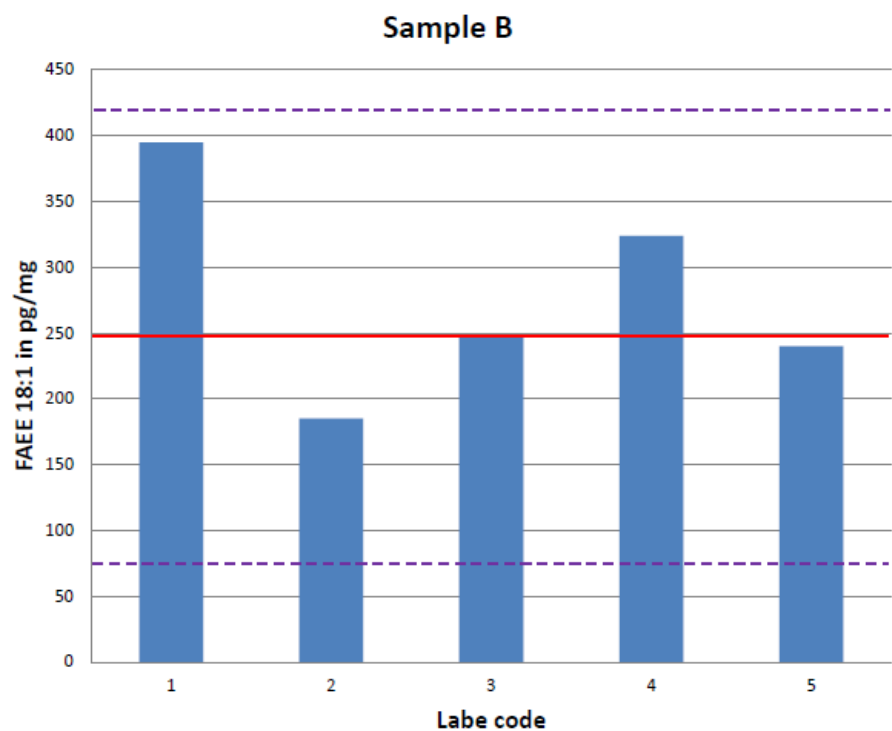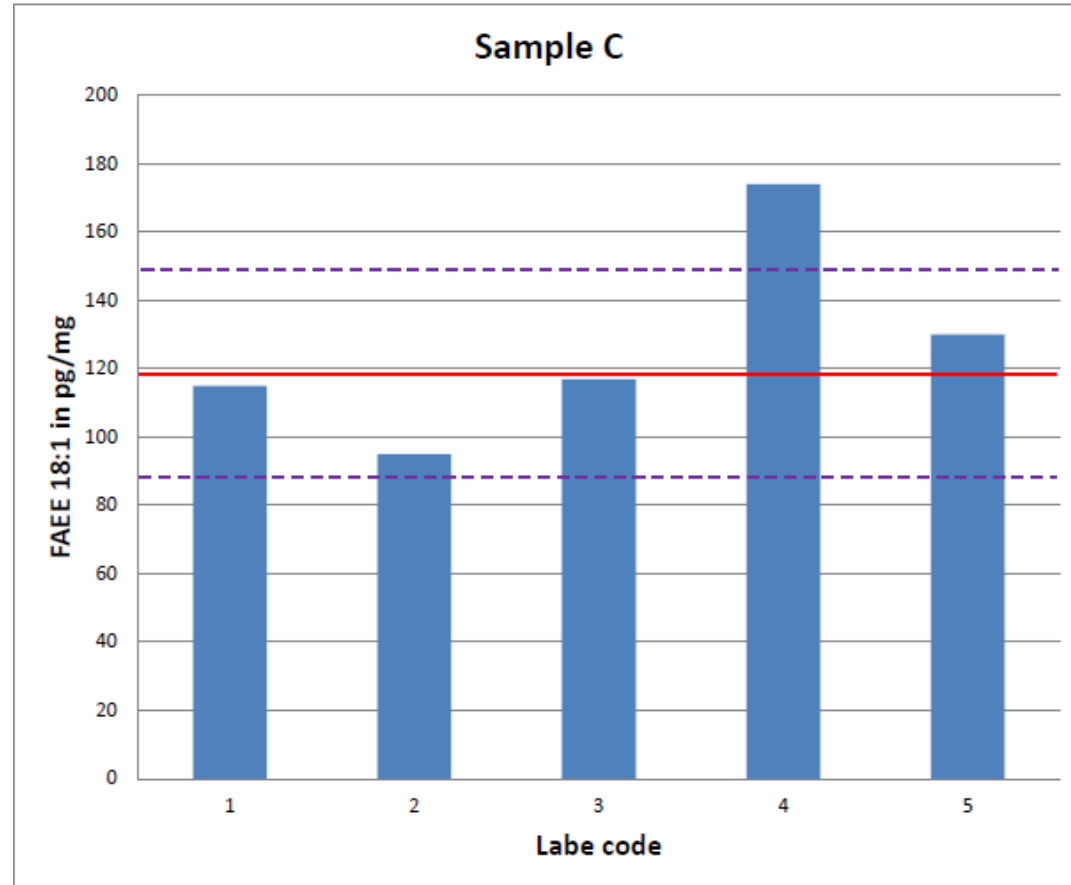Accepted range: 87 – 147 pg/mg
4 of 5 within accepted range
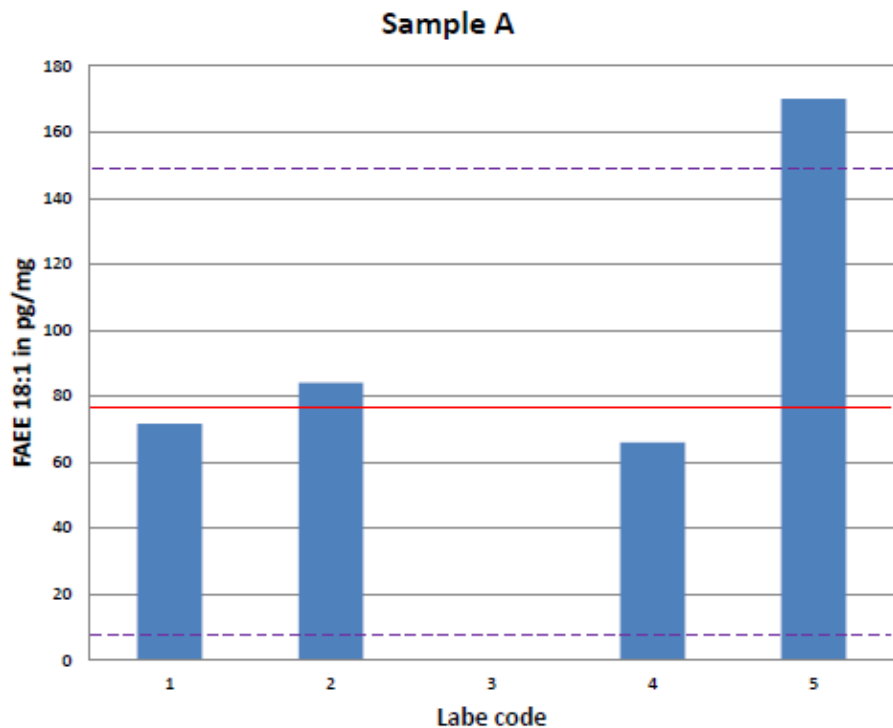
FAEE-Results 2018-2

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
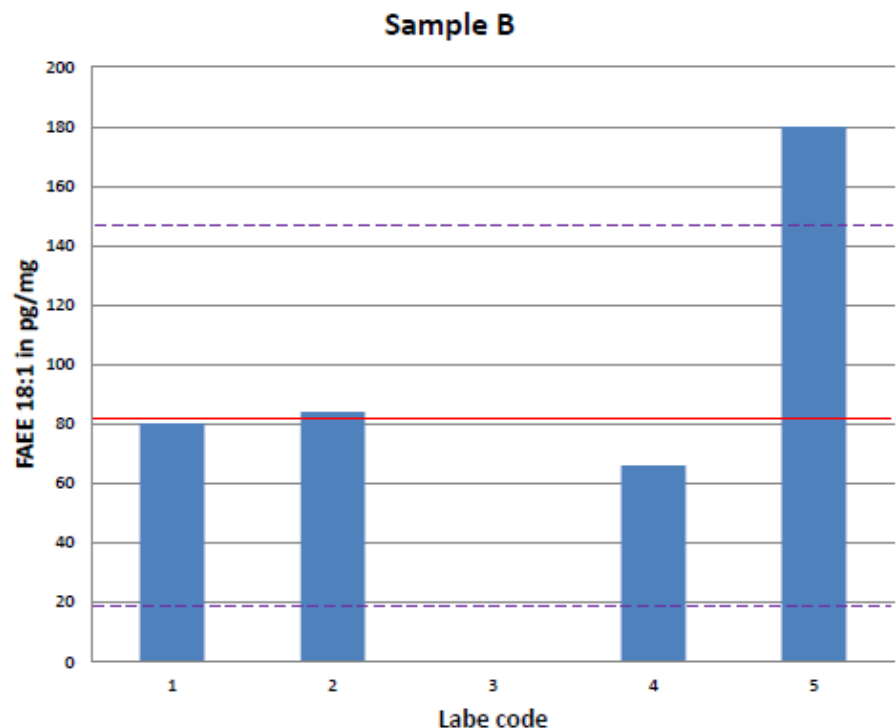4 of 5 within accepted range

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