



## Final PT report n. 2/2014

### PT report on “Digestion method to detect *Trichinella* larvae in meat samples according to the EU directive 2075/2005”

#### Design

Purpose	Evaluation of laboratories in charge for official inspection to detect <i>Trichinella</i> spp. larvae in meat	
Scheme type	Single, simultaneous	
Participants	NRLs of EU	
N. of participants	Depending on requests	
Method	Regulation CE 2075:2005 (annex 1)	
Test method	Regulation CE 2075:2005 (annex 1)	
PT items	Matrix	Pork/horse meat
	Item	<i>Trichinella</i> live larvae
	N. of samples	3 for each participant
	Distribution	Immediate shipment after preparation
Subcontracted activities	PT item transport and delivery	
Results evaluation	Qualitative and quantitative	

#### Implementation

N. of participants	33	PT items	Pork	93 samples
Public laboratories	0		Horse meat	6 samples
Private laboratories	0		PT panel composition	2 positives (4 larvae/sample) 1 negative
NRLs	33			
			Subcontractor	TNT Express
Shipping dates	March 17, 2014			



## Analysis of the results

According to EU directive No 2075/2005 of December 5, 2005, laying down specific rules on official controls for *Trichinella* in meat, the results of artificial digestion methods have to be expressed only qualitatively (i.e. as positive if *Trichinella* spp. larvae are found in the sample, or negative if no larva is present in the sample). However, in order to provide a useful self-assessment tool, a quantitative evaluation based on the number of larvae recovered in each sample is also included. Such additional information allows to assess the competence of participating laboratories and facilitates the documentation for continuous improvement.

## Qualitative results

The PT final evaluation is qualitative only. The PT is considered passed if all positive samples were correctly identified by the participant (i.e. no false negative result is accepted); if negative samples were included in the PT panel, only one false positive result is allowed.

Laboratory code	N° False positives	N° False negatives	Final evaluation
NRL1	0	0	positive
NRL2	0	0	positive
NRL3	0	0	positive
NRL4	0	0	positive
NRL5	0	0	positive
NRL6	0	0	positive
NRL7	0	0	positive
NRL8	0	0	positive
NRL 9	0	0	positive
NRL10	0	0	positive
NRL11	0	0	positive
NRL12	0	0	positive
NRL13	0	0	positive
NRL14	0	0	positive
NRL15	0	0	positive
NRL16	0	0	positive
NRL17	0	0	positive
NRL18	0	0	positive
NRL19	0	0	positive
NRL20	0	0	positive
NRL21	0	0	positive
NRL22	0	0	positive
NRL23	0	0	positive
NRL24	0	0	positive
NRL26	0	0	positive
NRL34	0	0	positive
NRL35	0	0	positive
NRL40	0	0	positive
NRL41	0	0	positive
NRL42	0	0	positive
NRL43	0	0	positive
NRL44	0	0	positive
TLE6	0	0	positive



### Summary of qualitative results:

Total number of PT panels	33
Number of participant laboratories	33
Number of participants that passed the PT	33
Number of participants that failed the PT	0
Number of participants that repeated the PT	-
Number of participants that successfully repeated the PT	-

### Quantitative results

#### Statistical analysis

For each sample, the absolute difference ( $|\Delta|$ ) between the expected and the observed number of larvae has been calculated. For each participant, the mean value of the absolute difference (mean  $|\Delta|$ ) over the three analyzed samples has been calculated. To evaluate the differences between the mean  $|\Delta|$  obtained by all participants, the non-parametric test of Kruskal-Wallis has been used.

Laboratory code	N. samples	Absolute mean difference (mean $ \Delta $ )	Standard deviation
NRL1	3	1	1.73
NRL2	3	0.33	0.58
NRL3	3	0.33	0.58
NRL4	3	0	0
NRL5	3	0	0
NRL6	3	0	0
NRL7	3	0	0
NRL8	3	0	0
NRL 9	3	0.67	1.15
NRL10	3	0.33	0.58
NRL11	3	0	0
NRL12	3	1.3	1.53
NRL13	3	0	0
NRL14	3	0.33	0.58
NRL15	3	1	1.74
NRL16	3	0.33	0.58
NRL17	3	0	0
NRL18	3	1.33	1.58
NRL19	3	0.67	1.15
NRL20	3	0.33	0.58
NRL21	3	0.33	0.58
NRL22	3	0.33	0.58
NRL23	3	0	0
NRL24	3	0	0
NRL26	3	1.67	1.53
NRL34	3	1	1
NRL35	3	0	0
NRL40	3	0.33	0.58
NRL41	3	0.67	0.58



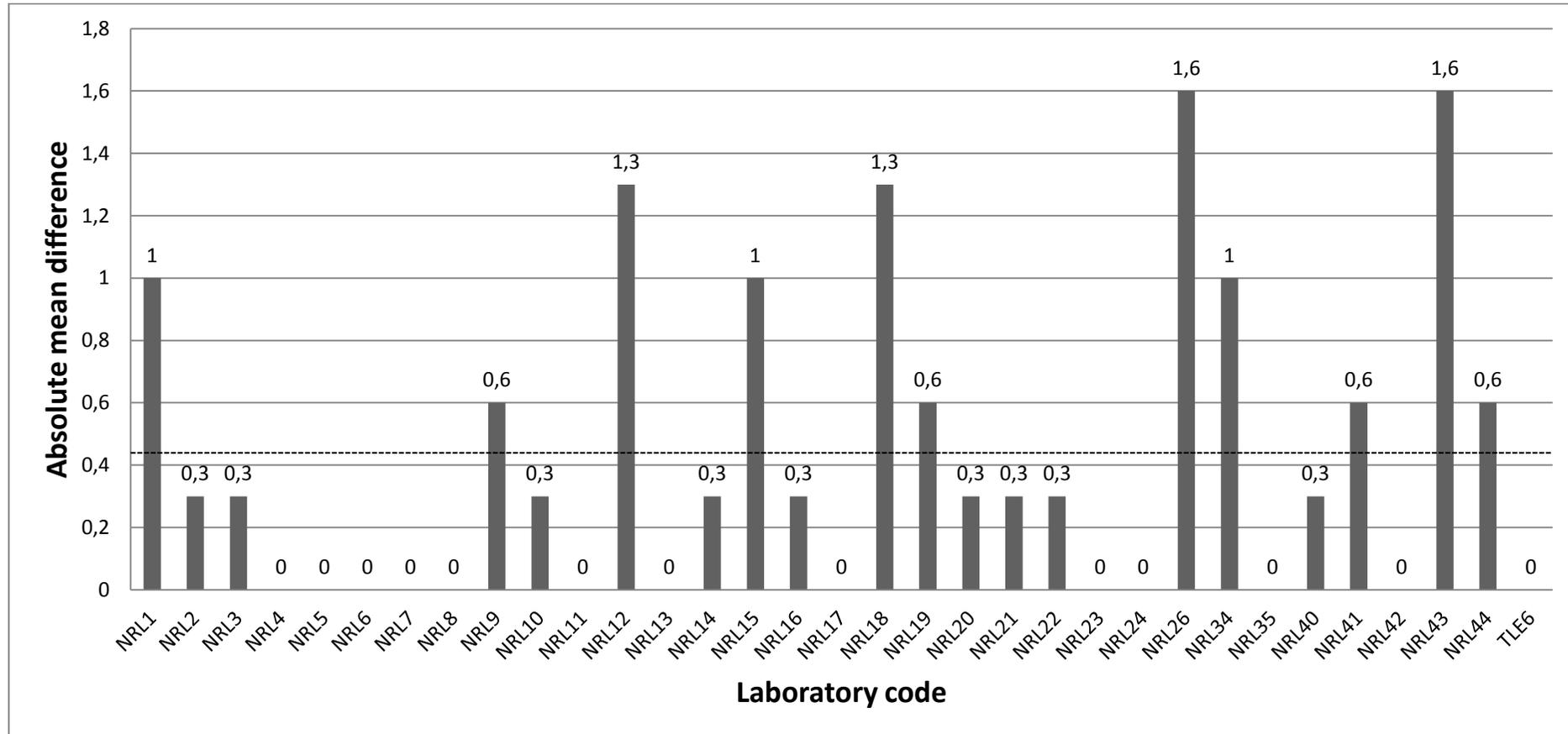
NRL42	3	0	0
NRL43	3	1.67	1.53
NRL44	3	0.67	0.58
TLE6	3	0	0
<b>TOTAL</b>	<b>99</b>	<b>0.44</b>	<b>0.85</b>

**Kruskal-Wallis test,  $p= 0.4310$**

A probability score greater than 0.05 (5%) means that the observed difference of mean  $|\Delta|$  values obtained by laboratories are not statistically supported and that it may have occurred by chance.



FIGURE 1



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**Figure 1.** Bar height represents the value of the absolute mean difference between the observed and the expected values, zero value on X-axis represents the optimal result. Bars are missing when the participant correctly identified all larvae spiked in the sample. The dotted line shows the overall mean difference calculated over all participants.

### Overtime comparison

For each sample, the relative difference ( $|\Delta_{rel}|$ ) between the expected and the observed number of larvae is calculated as follow: expected number of larvae minus observed number of larvae, divided by expected number of larvae.

For each participant, the mean value of the relative difference (mean  $|\Delta_{rel}|$ ) over the three analyzed samples has been calculated. The lower is the mean  $|\Delta|$  values, the best is the performance of the participant.

Laboratory code	Mean $ \Delta_{rel} $							
	2007	2008	2009	2010	2011	2012	2013	2014
NRL1	0.36	0.24	0.11	0.25	0.23	0.35	0.16	0.37
NRL2	0.14	0.22	0.07	0.08	0.09	0.08	0	0.12
NRL3	0.52	0.37	0.23	0.10	0.29	0.34	0.16	<b>0.12</b>
NRL4	0.20	0.12	0.03	0.12	0.13	0.13	0	0
NRL5	0.14	0.06	0.08	0.12	0.09	0.26	0.1	<b>0</b>
NRL6	0.30	0.08	0.17	0.10	0.04	0.17	0	0
NRL7	0.23	0.05	0.03	0.07	0.04	0	0	0
NRL8	0.13	0.08	0.03	0.12	0.02	0.05	0.2	<b>0</b>
NRL9	0.13	0.19	0.06	0.11	0.18	0.23	0.2	0.25
NRL10	0.17	0.45	0.28	0.41	0.15	0.14	0.1	0.12
NRL11	0.33	0.22	0.24	0.23	0.16	0.36	0.36	<b>0</b>
NRL12	0.72	0.10	0.10	0.26	0.18	0.5	0.1	0.5
NRL13	1	0.36	0.40	0.25	0.14	0.1	0.1	<b>0</b>
NRL14	0.75	0.12	0.20	0.12	0.18	0.16	0.36	<b>0.12</b>
NRL15	0.64	0.64	0.42	0.25	0.42	0.63	0.8	<b>0.37</b>
NRL16	0.41	0.33	0.13	0.23	0.33	0.62	1	0.12
NRL17	0.86	0.26	0.68	0.05	0.14	0.09	0	0
NRL18	0.26	0.27	0.45	0.37	0.53	0.34	0.5	0.5
NRL19	0.08	0.12	0.03	0.16	0.08	0.08	0.26	<b>0.25</b>
NRL20	-	0.19	0.08	0.01	0.07	0.03	0	0.12
NRL21	0.40	0.25	0.02	0.51	0.16	0.03	0.1	0.12
NRL22	0.36	0.41	0.30	0.23	0.15	0.18	0.16	<b>0.12</b>
NRL23	0.48	0.38	0.17	0.08	0.26	0.43	0.33	<b>0</b>
NRL24	0.45	0.27	0.37	0.36	0.26	0.24	0.1	<b>0</b>
NRL25	0.70	0.43	0.75	0.26	0.50	0.46	0.16	-
NRL26	-	-	-	0.15	0.11	0.33	0.2	0.62
NRL34	-	-	0.23	0.54	0.23	0.34	0	0.37
NRL35	-	-	-	0.44	0.36	0.59	-	<b>0</b>
NRL40	-	-	-	-	-	0.15	0.16	<b>0.12</b>
NRL41	-	-	-	-	-	-	0.16	0.25
NRL42	-	-	-	-	-	-	-	0
NRL43	-	-	-	-	-	-	-	0.62
NRL44	-	-	-	-	-	-	-	0.25
TLE6	-	-	-	-	-	-	0.6	<b>0</b>

**Legend:** Laboratories that performed better than the previous PT round are marked in bold.



**Comments:** All participant laboratories passed the PT and neither false positive nor false negative samples were reported.

The Director  
*Dr. E. Pozio*

**Data** 09/04/2014

Notes:

1. To guarantee confidentiality, participant laboratories are identified by an alphanumeric code. PT participant identity is kept confidential and bound by professional secrecy. If PT results have to be provided directly to a competent authority, the organizer shall send a written notice to inform the involved participants.
2. The organizer subcontracts PT item transport and delivery to a qualified transportation company.
3. Each participating laboratory receive a PT panel according to the PT scheme. Each PT item consists of minced pork or horse meat spiked or not with live *Trichinella spiralis* muscle larvae. The homogeneity of PT items is ensured by an accurate control of the number of larvae spiked into each sample (item), made by two operators using a stereo microscope. PT items are stable for 5 days from the date of preparation (corresponding to the shipping date), provided that they are maintained in suitable conditions.
4. At the beginning of each year, the organizer draws up a PT program and makes it known by publishing it on the EURLP website (for national, international, public and private laboratories) or by email (NRLs).
5. The final report issue of each PT round shows the PT program implementation.

End of the report