

Final report PT-04: An 1/2021

PT-04: “Detection of Anisakidae L3 larvae in fish fillets”

Design

| | | |
|--------------------------|--|--------------------------------------|
| Purpose | Evaluation of laboratories in charge of official control on food | |
| Scheme type | Single, simultaneous | |
| Participants | Public and private, European laboratories | |
| N. of participants | Depending on request | |
| Method | not regulated | |
| Test method | chosen by the participant | |
| PT items | Matrix | freshwater farmed fish fillet |
| | Item | Anisakidae live larvae |
| | N. of samples | 3 for each participant |
| | Distribution | Immediate shipment after preparation |
| Subcontracted activities | NA | |
| Results evaluation | Qualitative | |

Implementation

| | | | | |
|----------------------|------------|----------|------------------------|--|
| N. of participants | 30 | PT items | fish fillet sandwiches | 93 |
| Public laboratories | 0 | | PT panel composition | 3 fish fillet sandwiches: one spiked with 1 larva, two spiked with 3 larvae. |
| Private laboratories | 2 | | Shipping | DHL |
| NRL | 28 | | | |
| Shipping dates | 15/03/2021 | | | |

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PTP N° 0005 P

**Membro degli Accordi di Mutuo Riconoscimento
 EA, IAF e ILAC**

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Results

The PT final evaluation was only qualitative. The PT was considered passed if the participant correctly identified all positive and all negative samples.

| Laboratory code | N° of samples correctly identified | N° of samples NOT correctly identified | Final evaluation |
|-----------------|------------------------------------|--|------------------|
| A1 | 3 | 0 | Positive |
| A2 | 3 | 0 | Positive |
| A3 | 3 | 0 | Positive |
| A5 | 3 | 0 | Positive |
| A6 | 3 | 0 | Positive |
| A7 | 3 | 0 | Positive |
| A9 | 3 | 0 | Positive |
| A10 | 3 | 0 | Positive |
| A11 | 3 | 0 | Positive |
| A12 | 3 | 0 | Positive |
| A13 | 3 | 0 | Positive |
| A15 | 3 | 0 | Positive |
| A16 | 3 | 0 | Positive |
| A17 | 2 | 1 | Negative |
| A18 | 3 | 0 | Positive |
| A19 | 3 | 0 | Positive |
| A20 | 3 | 0 | Positive |
| A21 | 3 | 0 | Positive |
| A25 (A23/A33) | 3 | 0 | Positive |
| A26 | 3 | 0 | Positive |
| A28 | 3 | 0 | Positive |
| A29 | 3 | 0 | Positive |
| A30 | 3 | 0 | Positive |
| A31 | 2 | 1 | Negative |
| A35 | 3 | 0 | Positive |
| A36 | 3 | 0 | Positive |
| A38 | 2 | 1 | Negative |
| A39 | 3 | 0 | Positive |
| A41 | 2 | 1 | Negative |
| A42 | 3 | 0 | Positive |

Legend:

- Laboratories that failed the PT are highlighted in black.

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Summary of results:

| | |
|---|----|
| Total number of PT panels | 30 |
| Number of participant laboratories | 30 |
| Number of participants that passed the PT | 26 |
| Number of participants that failed the PT | 4 |

Overtime comparison of results

| Laboratory code | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|-----------------|------|------|------|------|------|------|------|------|
| A1 | P | P | P | P | P | P | N | P |
| A2 | P | P | P | N | P | P | P | P |
| A3 | N | P | P | P | P | P | | P |
| A5 | P | P | P | P | P | P | | P |
| A6 | P | P | P | P | P | P | P | P |
| A7 | P | P | P | P | P | P | P | P |
| A8 | P | P | P | | P | | | |
| A9 | P | | P | N | P | | P | P |
| A10 | P | P | N | P | P | P | P | P |
| A11 | P | N | P | N | P | P | N | P |
| A12 | P | N | P | P | P | P | P | P |
| A13 | P | P | P | N | P | P | P | P |
| A15 | P | P | P | P | P | P | P | P |
| A16 | N | P | P | N | P | P | P | P |
| A17 | NR | | P | P | P | P | P | N |
| A18 | P | P | P | P | P | P | N | P |
| A19 | P | P | P | P | P | N | P | P |
| A20 | P | P | P | P | P | P | N | P |
| A21 | P | P | P | P | P | P | P | P |
| A23/A33/A25* | N | P | P | N | P | P | P | P |
| A25 | P | P | P | N | | | | |
| A26 | P | P | P | P | P | P | P | P |
| A28 | P | | P | P | P | P | P | P |
| A29 | | | P | | P | P | P | P |
| A30 | | P | P | P | P | P | N | P |
| A31 | | P | P | P | P | P | | N |
| A35 | | | | | P | N | P | P |
| A36 | | | | P | P | P | P | P |
| A37 | | | | | N | | | |
| A38 | | | | | P | | | N |
| A39 | | | | | | P | | P |
| A41 | | | | | | | | N |
| A42 | | | | | | | | P |

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Comments:

In this PT round, 87% of the laboratories (26/30) passed the PT. Four laboratories failed the PT, and all reported false negative likely due to new unexperienced analysts or problems with the detection procedure. In particular, two used the Artificial Digestion (AD) method, one used the UV-press (UV) method, and one used the low sensitive candling. Noteworthy, 13 laboratories underestimated the number of spiked larvae in at least one sample and two laboratories overestimated the number of spiked larvae in one sample, reporting four larvae instead of three. In these cases, artificial digestion was applied as detection procedure (only one lab used UV method); the discrepancy could be explained by over-digestion or accidental breaking of the larvae during sample manipulation (e.g. sample mincing). Since the PT is only qualitative (presence/absence of the larvae), the PT results were considered positive but the laboratories were invited to consider the over-/under-estimation and to take appropriate actions including further training of the analyst on morphological identification of the larvae or proper application of the used method. Laboratories that failed the PT were invited to plan appropriate corrective actions (e.g. shipping of additional sample panel for an EQA).

This PT round highlighted a significant increase in both laboratory performance and a broader interest in the PT (two external private laboratories). Poor performance was observed in laboratories that joined the PT for the first time or that participated inconsistently. Lack of experience of technical personnel (either new or not familiar with the test methods) could explain the negative result.

After a constant decrease, we observed a net increase in PT participants (Figure 1) in comparison to the previous years (23 in 2020; 26 in 2019; 28 in 2018, 27 in 2017 and 30 in 2016). The relative percentage of detection methods adopted did not change substantially (Figure 1), although one laboratory moved from AD to UV method. Artificial digestion is still the prevalent method applied (23 laboratories), largely because it does not require special equipment. UV-press method, alone or in combination with digestion, was used in 7 laboratories. Except for one laboratory, candling was used in combination with artificial digestion and/or UV-press method.

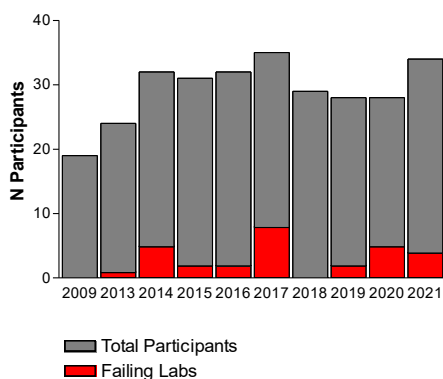


Figure 1. PT04 trend overtime

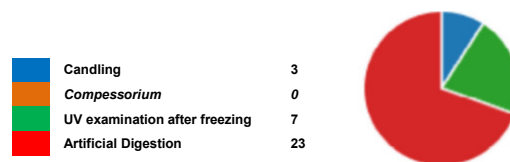


Figure 2. Summary of the detection methods applied

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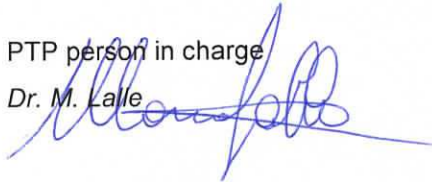
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PTP person in charge


Dr. M. Lalle



Date 29/04/2021

The Director

Dr. S.M. Cacciò



Notes:

1. To guarantee confidentiality, participant laboratories are identified by alphanumeric codes. PT participant identity is kept confidential and bound by professional secrecy. The PTP reserves itself the right to provide the laboratory PT result to the competent authority upon request.
2. The organizer designates a qualified company for the transport and delivery of PT items.
3. Each participating laboratory receives a PT panel according to the PT scheme. Each PT item consists of a fish fillet sandwich spiked or not with live Anisakidae 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. PT items are stable for 7 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 inform the NRLs by email.
5. The final report issue of each PT round shows the PT program implementation.

End of the report

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