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Test methods for fish and fishery products — Part 3: Determination of parasites in finfish by candling

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Table of contents

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This African Standard was prepared by ARSO/TC 03, *Fish, fisheries and aquaculture*.

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Test methods for fish and fishery products — Part 3: Determination of parasites in finfish by candling

1 Scope

This draft African standard specifies the method of test for determination of parasites in fish and fishery products by candling. This applies to white flesh processed as fillets, loins steaks, chunks or minced

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

CAC/GL 21, *Principles for the establishment and application of microbiological criteria for foods*

CAC/RCP 1, *Recommended international code of practice — General principles of food hygiene*

CAC/GL 30, *Principles and guidelines for the conduct of microbiological risk assessment*

CAC/GL 31, *Guidelines for the sensory evaluation of fish and shellfish in laboratories*

CAC/GL 48, *Model certificate for fish and fishery products*

CAC/RCP 52:2003*Code of practice for fish and fishery products*

CAC/GL 53, *Guidelines on the judgement of equivalence of sanitary measures associated with food inspection and certification systems*

ARS 56, *Labelling of pre-packaged foods — Specification*

3 Equipment and materials

3.1 Sharp knife

3.2 Candling table — Rigid framework to hold light source below rigid working surface of white, translucent acrylic plastic or other suitable material with 45-60 per cent translucency. Length and width of working surface should be large enough to permit examination of entire fillet, e.g., 30 × 60 cm sheet, 5-7 mm thick.

3.3 Light source — “Cool white” with color temperature of 4200 K. At least two 20-watt fluorescent tubes are recommended. Tubes and their electrical connections should be constructed to prevent overheating of light source. Average light intensity above working surface should be 1500-1800 lux, as measured 30 cm above centre of acrylic sheet. Distribution of illumination should be in ratio of 3:1:0:1, i.e. brightness directly above light source should be 3 times greater than that of outer field, and brightness of outer limit of visual field should be not more than 0.1 that of inner field. Illumination in examining room should be low enough not to interfere with detection of parasites, but not so dim as to cause excessive eye fatigue.

4 Sample preparation

Weigh entire sample and record weight on analytical reporting form.

4.1 Fillets

If fillets are large (200 g or larger), use one fillet for each of the 15 subsamples. If fillets are small (less than 200 g), randomly select fillets to prepare 15 subsamples of approximately 200 g each. Record

actual weight analysed for each subsample. If fillets are more than 30 mm thick, cut with a sharp knife into 2 pieces of approximately equal thickness (not to exceed 30 mm per fillet). Examine both pieces as described below. If fillets have a thickness of 20 mm or less, examine whole.
NOTE: Skin of fillets must be removed before examination.

4.2 Fish blocks

Analyse 15 subsamples randomly selected from 2 thawed and drained blocks. Prepare the subsamples as described for fillet, above. Note separately any parasites observed in minced fish added to block around subsamples.

4.3 Steaks, loins, chunks

Prepare as for fillets.

4.4 Minced fish

If frozen in blocks, analyse 15 subsamples randomly selected from 2 thawed and drained blocks. Prepare subsamples as described for fillets, above. Select portions from different parts of block. If not in blocks, analyse 15-200 g portions. Do not further shred or chop minced fish.

4.5 Breaded fish portions

Thaw frozen products at room temperature in a beaker of appropriate size. After thawing, pour hot (50 °C) solution of 2 per cent sodium lauryl sulfate in water over fish in increments of 100 ml per 300 g of product. Stir with glass rod for 1 min. Let stand for at least 10 min or until breading separates from flesh. Transfer individual portions to No. 10 sieve nested over No 40 sieve. Wash breading through No. 10 sieve with gentle stream of warm tap water. Periodically examine No. 40 sieve containing the breading. Using UV light. Parasites will appear fluorescent under this light. Note any parasites detected and record on the analytical reporting form. Discard breading by backflushing the No. 40 sieve with tap water.

Examine fish portions by candling, using white light. If the flesh is pigmented, use UV light.

4.5.1 Examination

Parasites near the surface will appear red, tan, cream-coloured, or chalky white. Parasites deeper in the flesh will appear as shadows. Remove, representative types of parasites or other defects found. Record general location, size, identification, and other observations as outlined below. For minced fish, spread portion on light table to a depth of 20-30 mm for examination. Select representative parasites for descriptive analysis.

4.5.2 Ultraviolet examination of dark-fleshed fish

Visually examine each portion (de-breaded or de-skinned, as necessary) on both sides under a desk lamp or similar light source. A magnifying desk lamp may be used. Report findings as described below. Conduct UV examination in darkened room. Examine each portion on both sides with reflected longwave UV light (366 nm wavelength). Parasites should fluoresce green under light of this wavelength. Fish bones and connective tissues, which also fluoresce blue, may be differentiated by their regular distribution and shape. Bone fragments will be rigid when probed.

CAUTION! Never expose unprotected eyes to UV light from any source either direct or reflected. Always wear appropriate eye protection such as goggles with uranium oxide lenses, welder's goggles etc. when such radiations are present and unshielded. Keep skin exposure to UV radiations to a minimum.

ENCYSTED PARASITE IN THE MUSCLE OF FISH

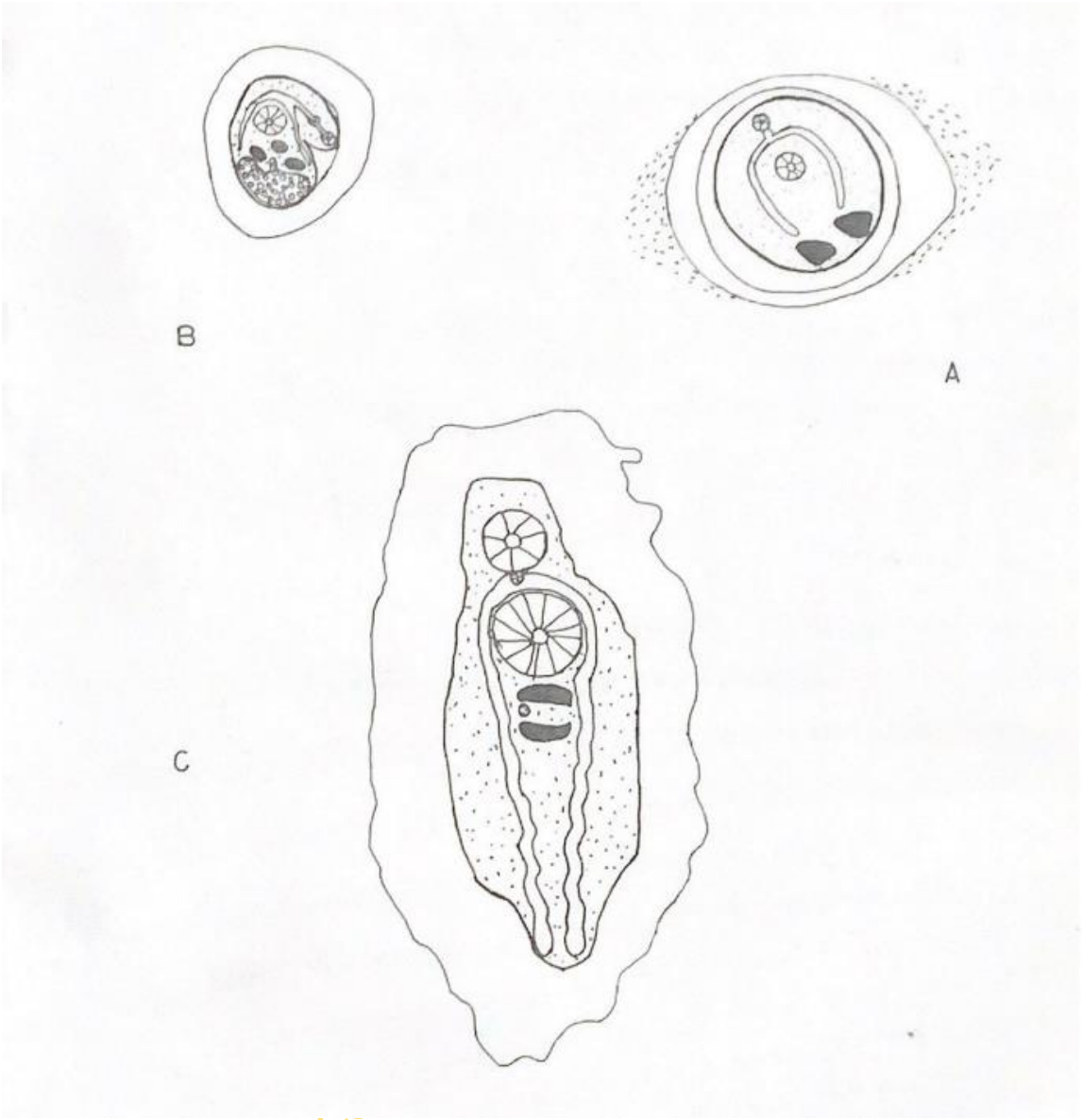

Figure 1A

A. Prohemistominae metacercariae

B. Heterophidae metacercariae

C. Clinostomum sp. metacercariae

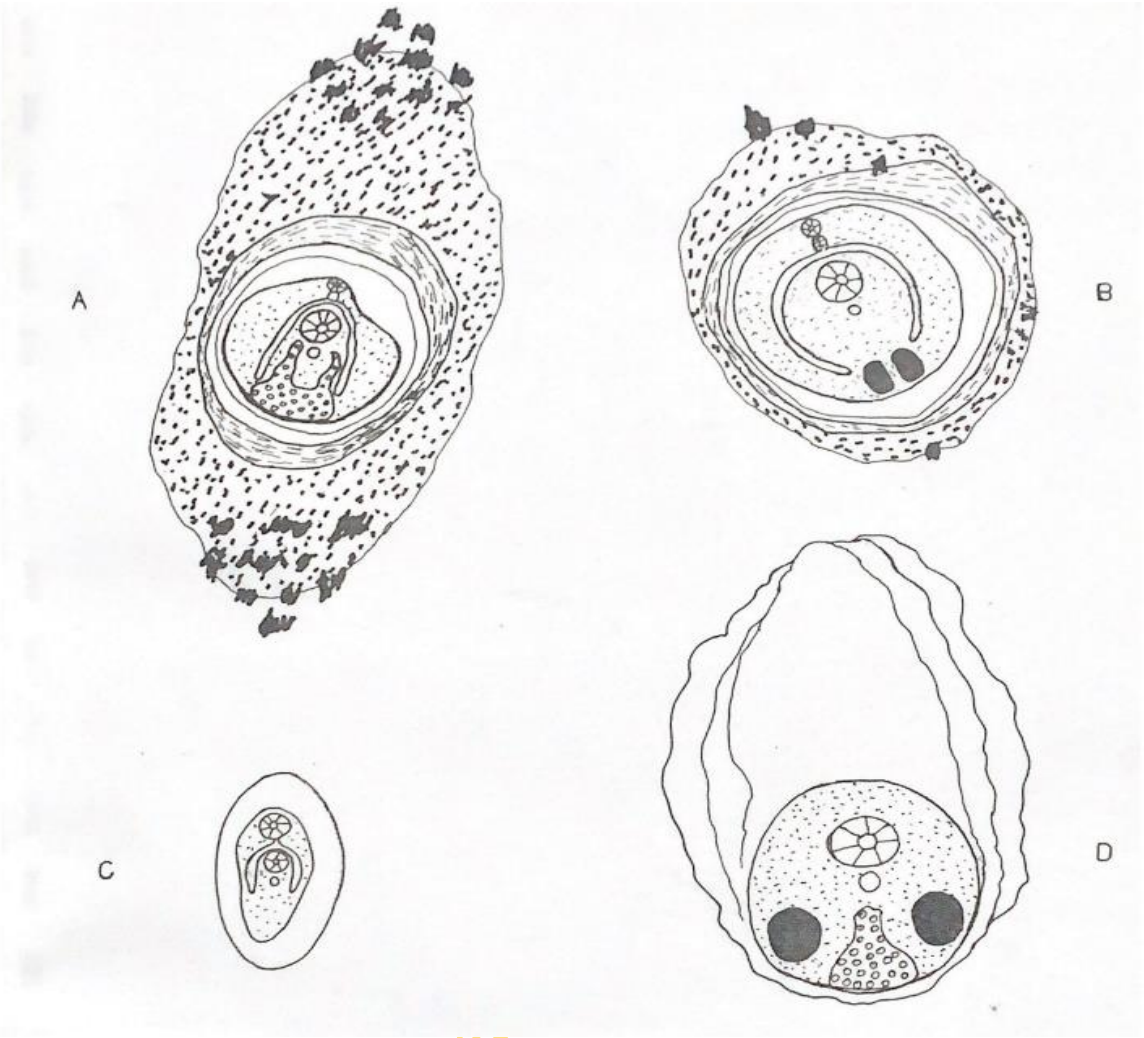

Figure 1B

A *Digenea gen. sp metercariae* -1-

B *Digenea gen. sp metercariae* -2-

C *Digenea gen. sp metercariae* -3-

D *Digenea gen. sp metercariae* -4-

Bibliography

Working Group to identify and acknowledge useful literature used in the preparation of this standard.