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Test methods for fish and fishery products — Part 1: Collection, storage and transportation of samples for analysis

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

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1 Scope

This draft African standard specifies the methods for collection, storage and transportation of fish and fishery products for analyses.

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 *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*

CODEX CXS *1General standard for Labelling of prepacked foods*

ISO 7218 *Microbiology of food and animal feeding stuffs — General requirements and guidance for microbiological examinations*

ISO 6887-3 *Microbiology of the food chain — Preparation of test samples, initial suspension and decimal dilutions for microbiological examination — Part 3: Specific rules for the preparation of fish and fishery products*

3 Terms and definitions

For the purpose of this standard the following definitions apply

3.1
lot
defined amount of material produced from fish and fishery products with uniform character and quality.

3.2
sample
a representative portion of a lot

3.3
sample unit
one of a number of individual containers which make up a lot.

3.4
analytical unit

amount withdrawn from the sample unit for analysis. Unless otherwise specified, it will be 100 g.

4 Sampling plans

An attribute sampling plan or a variable sampling plan may be used to estimate a representative sample of lot to established different biochemical and microbiological tests. Attribute plans are based on the presence or absence of a specific characteristic. They can be further subdivided into either two or three class plans.; putting in consideration aseptic sampling..

Variable sampling plans are based on the measurement of some continuous data and use of these plans requires knowledge of frequency and distribution. These plans are used also in the evaluation of shellfish growing waters and the performance of depuration plants.

5 Sample size

Sampling should be representative of the lot. Five samples units per lot will be drawn randomly for analysis unless otherwise specified.

6 Transportation

Transportation must be in refrigerated and aseptic condition. The mode of transportation of the samples to the laboratory shall ensure that they are kept under conditions which will minimise any alteration whether chemical or physical. Samples are to be delivered to the laboratory promptly with the original storage conditions maintained as nearly as possible.

Transportation of samples shall be in accordance ISO 6887-3 and ISO 7218

7 Laboratory apparatus

(a) Sterile screw-cap or ground glass stopped bottles, or autoclavable, non-toxic plastic bottles, with or without added thiosulfate.

(b) Felt pen.

(c) Glass-marking crayon.

(d) Sterile, wide mouth screw-cap jars — glass or autoclavable, non-toxic plastic.

(e) Long forceps stainless steel, or of noncorrodible, non-toxic material.

(f) Sterile plastic bags.

(g) Depth water sampler.

(h) Insulated containers.

(i) Ice or dry ice.

(k) scalpel and scissors

8 Media and reagents

Denatured Ethyl Alcohol 95 per cent for flaming instruments, or 70 per cent for general disinfection. Alternative disinfectants sterilization. The protective covering may be aluminium foil, rubberised cloth, heavy impermeable paper or bottle cover caps. Samples bottles to be used for collecting chlorinated

water shall contain 0.1 ml of a 10 per cent solution of sodium thiosulfate prepared with distilled water. This is sufficient for a 100 ml water sample. For larger bottles, add a proportionately larger amount of the thiosulfate solution. Add the thiosulfate solution to the bottles before they are sterilized. Use sufficient thiosulfate solution to neutralize all chlorine present (5 parts thiosulfate will neutralize 1 part chlorine).

In order to obtain a representative sample from a tap, open the tap fully and allow to run for 2 or 3 minutes, or a sufficient time to permit clearing of the service line. Remove the stopper or cap of the sample bottle and hold by the protective covering. Portable flame can be used to sterilise the tap to ensure that aseptic condition is achieved . After the sample is drawn, replace the stopper or cap in such a way that the protective covering remains in place. When a still body of water is to be sampled, remove the cap from the bottle as already outlined, hold the bottle near the base and plunge neck downward below the surface to a depth of about 30 cm,t then tilt with the neck pointed slightly upward. and during filling, push the bottle horizontally forward in a direction away from the hand to avoid contamination. If any current exists, direct the mouth of the bottle against the current. When applicable, use a depth sampler. The more popular devices utilize the sample bottle and are designed so that, upon reaching the desired depth, the stopper may be raised to fill the bottle. Such devices are useful to depths of 10 to 20 metres. Beyond that depth, hydrostatic pressure makes it impossible to remove the stopper. When such samplers are not suitable, the capillary tube water sampler in general use for oceanographic work may be used.

The number of water samples to be taken from any one source may be left to the discretion of the laboratory concerned, but keep in mind that sampling must be sufficient to detect contamination under all conditions that might influence the quality of the water. These would include current, tides, wind action, precipitation, landwash, temperature and salinity gradients. Whenever possible, start the bacteriological examination of water samples immediately after collection. When this is not feasible, sample bottles must be held at temperatures below 5 °C until analysed. The holding time should not exceed 6 h for impure waters and for all sea water samples, and should not exceed 24 h in any case. Should this time limit be exceeded, record actual time between sampling and analysis.

During sampling, allow for sufficient headspace in the bottles to permit adequate mixing of the sample by shaking.

Analysis of water samples can be initiated in the field. Samples should be inoculated into screw cap fermentation tubes of Lauryl Tryptose Broth (LTB) or lactose broth. The screw cap tubes are required to prevent sample spills during transportation to the laboratory where they will be incubated at 35 °C. The portable membrane filtration kit, can also be used for on-site analysis. Samples should be analysed in the laboratory within 72 h of sampling.

9 Fishery products

Take samples at the end of the processing line, i.e., the point beyond which no further handling of the product takes place. Take samples as packaged by the processor or in new polyethylene bags. Samples may be transferred to the bags by the operators who normally handle the fish at the end of the line. Frozen samples may consist of factory produced packages, or of portions removed aseptically from such packages, and must be kept frozen. Fresh samples must be adequately refrigerated until analysed. Analysis of unfrozen fillets should take place within 24 h of sampling, otherwise report the time of sampling and the time of analysis.. Reports must state whether or not the samples analysed have been frozen.

Inspections shall consist of 5 end-of-line samples spaced so as to be representative of the production of the plant for that particular run. When special sampling of a plant is being done, the point at which samples are to be taken and the numbers of samples to be taken will be left to the discretion of the competent authority In principle, however, reported data should be based on a sampling schedule comparable in scope to that used in reporting results for end-of-line samples.

Store frozen samples at the laboratory at a temperature not higher than -20 °C. The samples may be defrosted at room temperature for a period of 3 h or overnight at 5 °C to simplify sample preparation.

10 Raw shellfish (molluscs)

Samples of shellstock and of shucked unfrozen shellfish should be examined within 24 h after collection. When analysis is unavoidably delayed beyond this point, actual time elapsed between collection and analysis must be reported.

Heavy plastic bags (6 mil gauge) are suitable for shellstock. Keep shellstock samples in refrigerated storage but avoid freezing. Do not permit shellstock to come into direct contact with ice.

In general, take 12-18 shellfish in order to obtain a representative sample and to allow for the selection of 10 sound animals suitable for shucking. For most species this sample size will yield approximately 200 g of meats and shell liquor.

A sterile, wide-mouth jar of suitable capacity with water-tight closure is an acceptable container for samples of shucked shellfish taken in shucking houses. Transfer the shellfish to the samples jar with sterile forceps or spoon. Sampling of the final product may be taken in the packing cans or containers. Consumer packages are acceptable for examination. Refrigerate samples of shucked shellfish immediately after collection by packing in crushed ice and keep them in ice until examined. The shellfish must not come into direct contact with ice.

11 Breading and batter

Transport dry ingredients in sterile wide-mouth screw-cap jars or in polyethylene bags. These need not be refrigerated. Transport batter in sterile jars and keep at 5 ˚C or lower until analysed.

12 Canned fish

Randomly select samples from lot(s) following appropriate directives for sample size. Transport the sample(s) to the laboratory at ambient temperature. Take special precautions when transporting cans that are obviously swollen or under pressure. Place swollen cans in a plastic bag and transport inside a box or a cooler. These cans should be examined immediately on arrival at the laboratory. DO NOT INCUBATE SWOLLEN CANS. Except for swollen cans, each sample unit must be judged by the laboratory as to whether or not preliminary incubation would be desirable. When cans are suspected of being non-sterile due to some apparent defect or because of loss of vacuum, such cans may also be opened without prior incubation are acceptable if they leave no toxic residues that may be transmitted to the sample.

Bibliography

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