CODEX ALIMENTARIUS COMMISSION E

Food and Agriculture Organization of the United Nations

World Health Organization

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Agenda Item 8 **CX/FFP 14/33/10 Add.2**
ORIGINAL LANGUAGE ONLY

JOINT FAO/WHO FOOD STANDARDS PROGRAMME
CODEX COMMITTEE ON FISH AND FISHERY PRODUCTS

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PROPOSED DRAFT CODE OF PRACTICE FOR PROCESSING OF FISH SAUCE (At Step 3 of the Procedure)

Comments submitted by Canada and African Union

CANADA

General Comments

Canada appreciates the work done by Thailand and Vietnam in developing the *Proposed Draft Code of Practice for Processing Fish Sauce* and supports the advancement of this Code of Practice in the Codex Step procedure.

Canada`s specific comments pertain mostly to the addition and re-organization of processing steps. As such, the numbering of steps may have to be revised to take into account the proposed changes.

Regarding EWG Report

Item 12, last sentence. *…. In case the botulinum toxin was formed, such toxin was inactivated by proteolytic enzymes in fish during the fermentation process (FAO, 1992). Similar to other salted fishery products, fish sauce's process eliminates preformed toxin and prevents toxin formation during the processing….*

- Comment: Canada does not fully support this statement from the 1992 FAO publication[1] as it does not have a scientific reference. This publication also has the following contradictory statement "*Toxins produced by Clostridium botulinum in poor quality fish before salting may be stable in the salted product (Huss and Rye-Petterson, 1980)".* Progenitor toxins can be stable for weeks at room temperature in sterile culture filtrate, in spoiling fish and low acid fish products and are unaffected by sterile saturated salt (NaCl) solutions or by the salt added to fish. This is supported by the finding of stable *C. botulinum* toxin by Canadian laboratories, and reported in other scientific papers, in salted fish which have caused outbreaks (e.g., salted fish such as fesikh and kapchunka) (CDHS, 1981; Anonymous, 1987; Webber *et al*., 1993; FDA, 2000). It is therefore possible for *C. botulinum* toxin to form prior to the uptake of salt by the fish to > 10% salt in the water phase, unless the growth and toxin production of *C. botulinum* is controlled. This could be accomplished by keeping the fish at low temperature until complete permeation of the flesh with inhibitory and uniform salt concentration to achieve the parameters which would prevent the growth of *C. botulinum*. This position is reflected below in our specific comments for section 1.1 Fish, proposed new section X. Washing and Gutting and section 3. Fermenting.

[1] Essuman, K.M. (1992). Fermented fish in Africa. A study on processing, marketing and consumption. FAO Fisheries Technical Paper. No. 329. Rome, 80p. Available at: http://www.fao.org/docrep/T0685E/T0685E02.htm#Abstract

Introduction

- Revise 1st paragraph (9th sentence) : … control the ~~types~~ **growth** of microorganisms…

  Reason: Editorial
- Revise 1st paragraph (10th sentence) : The ~~quality~~ **organoleptic** ~~characteristics~~ **criteria** of colour,……

  Reason: To align with the standard.

1.1 Fish

- Revise 1st bullet, 3rd point: microbiological criteria ~~(to prevent the processing of raw material containing microbiological toxins)~~ for fish ~~with risk.~~

Reason: Microbiological criteria do not normally include specialized testing for microbial toxins.

- Delete 3rd bullet: ~~Fish greater than 12 cm in length that required gutting on arrival at the processing facility should be gutted efficiently without undue delay and with care to avoid contamination~~.

Reason: We suggest that this statement be moved under the proposed new section X. Washing and Gutting as these measures would occur during this step rather than at the fish reception step.

- Comment : The step should include guidance on how to ensure that fish to be processed without gutting are not contaminated with *Clostridium botulinum* toxin. Contaminated fish may not look or smell spoiled and the microbiological criteria do not include the specialized testing for microbial toxins.

1.2 Salt requirements

- Revise title: **1.2 ~~Salt requirements~~ Ingredients**

Reason: Requirements for all ingredients used should be outlined.

- Revise 1st bullet: ~~The quality of salt used in salting of fish should possess an appropriate composition for the product.~~ **The salt used should be of food grade quality.**

Reason: To provide specific guidance that aligns with various sections of the COP on Fish and Fishery products regarding the use of salt (definitions, 12.1.2 …).

Add:

- **Food additives and levels used need to be in compliance with the *Standard for Fish Sauce* (CODEX STAN 302-2011), and used in compliance with *General Standard for Food Additives* (CODEX STAN 192-1995), and other relevant regulations. Food additives used need to be identified with names and identification numbers which are complied with Codex *Class Names and the International Numbering System for Food Additives* (CAC/GL 36-1989).**
- **Ingredients should be examined to ensure that they are not intact and not contaminated.**
- **Defective ingredients should not be used.**

Reason: To align with the guidance on ingredients found in other codes.

1.2.1 Salt handling and storage

- Revise title: 1.2.1 ~~Salt~~ Ingredient ~~handling and~~ storage

Delete bullet: ~~Salt should be transported and stored dry and hygienically covered in salt bins, storerooms, containers or in plastic sacks.~~

- Add:
  - **Ingredients should be stored appropriately in terms of temperature and humidity.**
  - **Ingredients should be stored in a dry and clean place under hygienic conditions.**
  - **Ingredients should be properly protected and segregated to prevent crosscontamination**~~.~~

Reason: To provide general guidance for all ingredients in line with other Codes.

New Optional step (prior to the step 2 "Mixing of Fish and Salt")

X. Chilled Storage

Potential hazards: microbiological contamination, biotoxins, scombrotoxin

Potential defects: decomposition, physical damage

Technical guidance:

- **Fish should be moved to the chilled storage facility without undue delay.**
- **The facility should be capable of maintaining the temperature of the fish between 0 °C and +4 °C.**
- **The chill room should be equipped with a calibrated indicating thermometer. Fitting of a recording thermometer is strongly recommended.**
- **Stock rotation plans should ensure proper utilization of the fish.**
- **The fish should be stored in shallow layers and surrounded by sufficient finely divided ice or with a mixture of ice and water before processing.**
- **Fish should be stored such that damage from overstacking or overfilling of boxes will be prevented.**
- **Where appropriate, replenish ice supply on the fish or alter temperature of the room.**

Reason: This step is required to ensure proper storage of fish which cannot be processed upon reception.

Comment: This step would follow Step 1.1 Fish (if applicable) and then lead to Step "Mixing of fish and salt"

New Optional Step (prior to the step 2 "Mixing of Fish and Salt")

X. Washing and Gutting (if applicable)

Potential hazards: microbiological contamination, scombrotoxins

Potential defects: presence of viscera, bruising, off-flavours, cutting faults

Technical guidance:

- **Fish greater than 12 cm in length should be gutted prior to storage or processing.**
- **Gutting is considered complete when the intestinal tract and internal organs have been removed.**
- **An adequate supply of clean seawater or potable water should be available for washing of:**
  - **whole fish, to remove foreign debris and reduce bacterial load prior to gutting;**
  - **gutted fish, to remove blood and viscera from the belly cavity;**
  - **surface of fish, to remove any loose scales;**
  - **gutting equipment and utensils, to minimize buildup of slime, blood and offal.**

Reason: It was agreed by the EWG that larger fish should be gutted to address the risk of *C. botulinum* formation in the gut therefore adequate guidance should be provided on this. It is good practice to clean whole and gutted fish to reduce the bacterial load prior to processing. This guidance is in line with the COP on Fish and Fishery Products.

Comments:

1) The EWG suggested the gutting of fish greater than 12 cm in length however botulinum toxin can form in un-eviscerated fish regardless of its size.
2) This step would follow either Step 1.1 Fish (if applicable) or the proposed new Step 2 Chilled Storage and then lead to the Step "Mixing of fish and salt"

2. Mixing of fish and salt

- Revise Potential hazards: … microbiological contamination ~~(*Clostridium botulinum* and *Staphylococcus aureus* toxins)~~

Reason: Microbiological criteria do not include microbial toxin testing. The detection of toxins requires specialized testing that is not routine.

- Revise 2nd bullet: …In any case, the concentration of salt **in the final product** should not be less than 20% by weight

Reason: To clarify that regardless of the ratio by weight of fish to salt applied, in the final product the salt concentration must reach 20% by weight (as proposed by the EWG).

3. Fermenting

- Revise: *Potential hazards*: ~~unlikely~~ **histamine, microbiological contamination, biotoxins**
- New bullet: **The ambient temperature should be held below 4°C and monitored until the salt is diffused throughout the product**

Reason: Microbial growth, histamine and biotoxins formation may occur prior to the salt diffusing throughout the product and resulting in a bacteriostatic barrier.

5. Brine preparation

Canada suggests to develop guidance on the percentage of salt solution which should be used.

8. Blending

- Delete and Move to Step 1.2 : ~~Food additives and levels used need to be in compliance with the *Standard for Fish Sauce* (CODEX STAN 302-2011), and used in compliance with *General Standard for Food Additives* (CODEX STAN 192-1995), and other relevant regulations. Food additives used need to be identified with names and identification numbers which are complied with Codex *Class Names and the International Numbering System for Food Additives* (CAC/GL 36-1989).~~

Reason: This guidance is better suited for the Ingredients step (1.2).

16. Heating

- Canada suggests providing a description on the objective of heating the fish sauce and providing further guidance on the temperature and duration of heating.

17. Ingredients and additives

- Delete and Move guidance: from Step 17 to Step 1.2 Ingredients and 1.2.1 Ingredient Storage.

Reason: As per comments for sections 1.2 and 1.2.1, to combine guidance for all ingredients in a single ingredient reception step and single ingredient storage step.

18. Packaging materials

- Delete 1st and 2nd bullets:
  - ~~Packaging used should be stored appropriately in terms of temperature and humidity.~~
  - ~~Packaging used should be properly protected, cleaned and segregated to prevent cross-contamination.~~

Reason: The guidance pertains to the storage conditions which should be in a separate step as suggested below.

- Add bullets:
  - **Labels should be verified to ensure that all information declared meets, where applicable, the *General Standard for the labelling of prepackaged foods* (CODEX STAN 1-1985),** and **labelling provisions of the Codex Standard for Fish Sauce and/or other relevant national legislative requirements.**
  - **Packaging materials should be examined to ensure that they are intact and not contaminated .**

Reason: To align with the guidance in Code on Fish and Fishery Products.

New Step

- Add: **X. Storage of Packaging Materials**
  - **Packaging materials should be stored in a dry and clean place under hygienic conditions**.
  - **Packaging materials should be properly protected and segregated to prevent cross-contamination**
  - **Defective ingredients and packaging materials should not be used**.

Reason: To align with the Code on Fish and Fishery Products.

AU

Comments / observations	**Recommendations**
1. Reception of raw materials 1.1 Fish Technical guidance: - Organoleptic characteristics, such as appearance, odour, **colour, etc.** - Microbiological criteria (to prevent the processing of raw material containing microbiological toxins and **pathogenic microorganisms)** for fish with risk - ***suggest inclusion of environmental pollutants*** - skills should be acquired by fish handlers and appropriate personnel in sensory evaluation techniques to ensure that raw fish meets essential quality provisions of appropriate Codex standards. (**and in sorting of fish species that pose a risk of biotoxins such as ciguatoxin in large carnivorous tropical and subtropical reef fish**). 1.2 salt requirements Technical guidance: - it is suggested that bullet one to read: .... The quality of salt used in salting of fish should possess an appropriate composition ***in accordance with Codex guidelines*** **for the product.**	It is suggested that the highlighted be inserted. It is suggested that the highlighted be deleted since it can be taken care of by the first part of the sentence. It is suggested that the highlighted be deleted since it can be taken care of by the first part of the sentence.