CODEX ALIMENTARIUS COMMISSION

Food and Agriculture Organization of the United Nations

World Health Organization

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COMMENTS OF THAILAND

Part 1 – Standards and related texts submitted for final adoption

Methods of analysis/performance criteria/sampling plan for provisions in Codex standards (CXS 234-1999)

First of all, Thailand appreciates the work undertaken by the Committee. Thailand acknowledges the significance of the work on the review of methods of analysis in CXS 234-1999 and the submission of methods for CAC approval or revocation. Additionally, we appreciate the great efforts of the Codex Secretariat, the Chair and Co-Chair of the relevant EWG and WG, and member countries, in particular for considering the large amount of information from across Codex standards.

In general, we agree with the adoption of methods of analysis proposed by the CCMAS. However, Thailand has a specific concern on the adoption of proposed methods of analysis in ***Part A – Methods of Analysis by Commodity Categories and Names*** under **Fish and fishery products** regarding the following issue:

Issue: Determination of fish content (declaration)- nitrogen, moisture, total fat, and ash in Quick Frozen Fish Sticks (Fish Fingers), Fish Portions and Fish Fillets - Breaded or in Batter

(which is a provision of Codex Standard for Quick Frozen Fish Sticks (Fish Fingers), Fish Portions and Fish Fillets - Breaded or in Batter (CXS 166 – 1989))

Thailand does not object to the endorsement of the methods of analysis and their types for nitrogen, moisture, total fat, and ash used to determine fish content declarations for labelling purposes in the products *Quick Frozen Fish Sticks (Fish Fingers), Fish Portions and Fish Fillets – Breaded or in Batter*.

However, Thailand notes that, according to Appendix VI of the *Recommended Methods of Analysis and Sampling (CXS 234-1999)*, the estimation of fish content shall be carried out using AOAC Method 996.15 (end-product method). Furthermore, these four analytical methods are listed as other chemical analysis methods (nitrogen factor end-product methods) and are considered appropriate in cases where there is reason to doubt the composition of the fish core (e.g. when non-fish ingredients may be present). Except for fully cooked products, this method requires confirmation with AOAC Method 996.15 as the following details.

APPENDIX VI

DETERMINATION OF FISH CONTENT (DECLARATION) IN QUICK-FROZEN FISH STICKS (FISH FINGERS), FISH PORTIONS AND FISH FILLETS – BREADED OR IN BATTER

Estimation of fish content

AOAC Method 996.15. (End-product method)

Calculation:

% fish content = (Wd/Wb) X 100 + adjustment factor*

Wd = weight of debattered and/or debreaded test unit

Wb = weight of battered and/or breaded test unit

* Raw breaded frozen coated fish and fishery products: 2.0%

* Batter-dipped frozen coated fish and fishery products: 2.0%

* Precooked frozen coated fish and fishery products: 4.0%

Reference: J. AOAC Int. 80, 1235 (1997)

Other methods

(1) Chemical analysis method (nitrogen factor end-product method)

Appropriate in cases where there is reason to doubt the composition of the fish core (i.e. appears to contain non-fish ingredients). Except for fully cooked products, this method requires confirmation with the AOAC Method 996.15, or with Method #2 (Determination of fish content) in conjunction with investigation at the processing plant when determining product compliance with the labelling provisions in CXS 166-1989.[12] This method should trigger in-factory investigation (e.g. raw ingredient recipe checks) when suspect products are identified.

The percentage fish content, corrected for the non-fish flesh nitrogen contributed by the carbohydrate coating, is calculated as follows.

$$\%\ \text{Fish} = \frac{(\%\ \text{total nitrogen} - \%\ \text{nonfish flesh nitrogen})}{\text{N factor}^*} x100$$

*appropriate N (nitrogen) factor

The non-fish flesh nitrogen is calculated as follows:

% non-fish flesh nitrogen = % carbohydrate X 0.02

Where the carbohydrate is calculated by difference:

% carbohydrate = 100 – (%water + % fat + % protein + % ash)

References

Determination of nitrogen: ISO 937

Determination of moisture: ISO 1442

Determination of total fat: ISO 1443

Determination of ash: ISO 936

In addition, when using this chemical analysis approach, it is necessary to determine nitrogen, moisture, total fat, and ash in order to calculate the percentage of fish content for the chemical analysis methods (nitrogen factor end-product methods) according to the formula provided in Appendix VI.

Therefore, Thailand is of the view that the inclusion of these methods should make explicit reference to Appendix VI, to enhance completeness, clarity, and consistency, and to avoid potential confusion among users of *CXS 234-1999*.

Accordingly, Thailand proposes that the editorial amendments to these 4 methods to ensure clarity and alignment, as follows:

Fish and fishery products				
Commodity	***Provision***	***Method***	***Principle***	***Type***
Quick frozen fish sticks (fish fingers), fish portions and fish fillets – breaded or in batter	Determination of fish content (declaration) – Nitrogen	ISO 937 and See Appendix VI	Titrimetry (Kjeldahl digestion) and calculation	II
Quick frozen fish sticks (fish fingers), fish portions and fish fillets – breaded or in batter	Determination of fish content (declaration) – Moisture	ISO 1442 and See Appendix VI	Gravimetry and calculation	I
Quick frozen fish sticks (fish fingers), fish portions and fish fillets – breaded or in batter	Determination of fish content (declaration) – Moisture	ISO 1443 and See Appendix VI	Gravimetry and calculation	I
Quick frozen fish sticks (fish fingers), fish portions and fish fillets – breaded or in batter	Determination of fish content (declaration) – Moisture	ISO 936 and See Appendix VI	Gravimetry and calculation	I

Part 2 – Codex standards and related texts proposed for revocation

Specified methods of analysis for provisions in Codex standards (CXS 234-1999)

Thailand has a specific concern on the revocation of method of analysis in ***Part A – Methods of Analysis by Commodity Categories and Names*** under **Fish and fishery products, and Appendix VIII** as the following issue:

Issue: Determination of salt saturation in Salted Fish and Dried Salted Fish of the Gadidae Family of Fishes

(which is a provision of Codex Standard for Salted Fish and Dried Salted Fish of the Gadidae Family of Fishes (CXS 167-1989))

Thailand notes that, at its 34th Session, the Codex Committee on Methods of Analysis and Sampling (CCMAS) agreed to the deletion of method for determination of **salt content** for fish and fishery products under *Part A – Methods of Analysis by Commodity Categories and Names*. This agreement followed the replacement of the method with performance criteria for sodium chloride and for salt determined as chloride, expressed as sodium chloride, as presented in Table 1 of *REP25/MAS, Appendix II*.

However, Thailand observes that the *Codex Standard for Salted Fish and Dried Salted Fish of the Gadidae Family of Fishes (CXS 167-1989)* contains specific labelling provisions under *"Name of the Food"* that relate to **salt saturation**. Specifically, the standard stipulates that:

- the term *"klippfish"* can only be used for dried salted fish which has been prepared from fish which has reached **95% salt saturation** prior to the drying; and
- the term *"wet salted fish"* can only be used for fish **fully saturated with salt**, as illustrated below:

6. LABELLING

In addition to the provisions of the *General standard for the labelling of pre-packaged foods* (CXS 1-1985),[5] the following specific provisions apply:

6.1 Name of the food

The name of the food to be declared on the label shall be "salted fish", "wet salted fish" or "salted fillet" "dried salted fish" or "klippfish" or other designations according to the law, custom or practice in the country in which the product is to be distributed. In addition, there shall appear on the label in conjunction with the name of the product, the name of the species of fish from which the product is derived.

For forms of presentation other than those described in Section 2.3.1 "split fish", the form of presentation shall be declared in conjunction with the name of the product in accordance with Section 2.3.2 as appropriate. If the product is produced in accordance with Section 2.3.3, the label shall contain in close proximity to the name of the food, such additional words or phrases that will avoid misleading or confusing the consumer.

The term "klippfish" can only be used for dried salted fish which has been prepared from fish which has reached 95 percent salt saturation prior to drying.

The term "wet salted fish" can only be used for fish fully saturated with salt.

6.2 Labelling of non-retail containers

The labelling of non-retail containers should be in accordance with the *General standard for the labelling of non-retail containers of foods* (CXS 346-2021).[6]

While the CCMAS, at its 44th Session, intends to propose the method performance criteria for sodium chloride and for salt in salted and dried salted fish of the Gadidae family for adoption by the CAC at its 48th Session, Thailand notes that the result from this method provides only the salt content. To determine salt saturation, further calculation is necessary.

In this regard, the current *Recommended Methods of Analysis and Sampling (CXS 234-1999)* indicates that the percentage of salt saturation may be calculated based on the ratio of salt in water in the product to the solubility of sodium chloride in water (36 g per 100 g water), as described in footnote xii.

[xii] The % salt saturation is calculated as follows:

1. % salt in water = (% salt content / (% salt content + % moisture)) x 100%
2. % salt saturation = (% salt in water / 26.4 %*) x 100%

* The solubility of sodium chloride in water is 36 g per 100 g water, and the constant is calculated as follows: 36 g sodium chloride / (100 g water + 36 g sodium chloride) x 100% = 26.4%

Furthermore, Thailand notes that the revised *Appendix VIII* proposed by the Committee had already deleted information relating to salt content; however, bullet point (i) still refers to the determination of percentage salt saturation.

~~**The presence of natural halogens other than chloride in fish and salt is negligible.**~~

~~**A step, in which proteins are precipitated (ii), is essential to avoid misleading results.**~~

~~**PART 3: DETERMINATION OF WATER CONTENT**~~

Salted fish and dried salted fish of the *Gadidae* family of fishes

i) Determination of % salt saturation as required by the standard, should be in accordance to AOAC 950.46.B (air-drying (a)).

ii) Determination of water content in the whole fish, when needed in the commercial trade of klippfish and wet salted fish, the method of sampling the fish should be carried out according to the "Determination of water content in whole fish by cross section method" defined in the annex to this appendix.

Salted Atlantic herring and salted sprat

Determination of water content is performed according to AOAC 950.46B (air-drying).

In our view, all provisions and its method of analysis or performance criteria for each standard should be stipulated in *Part A – Methods of Analysis by Commodity Categories and Names* of CXS 234-199. Furthermore, **salt saturation differs from salt content**.

Therefore, Thailand proposes the CAC in its 48th Session to **retain the detailed analytical method for salt saturation, along with the texts in footnote xii**, in relation to the product *Salted Fish and Dried Salted Fish of the Gadidae Family of Fishes*. This will ensure that *Part A of CXS 234-1999* remains **complete and consistent** with the *Codex Standard for Salted Fish and Dried Salted Fish of the Gadidae Family of Fishes (CXS 167-1989)*, for the reasons outlined above.

Moreover, we have carefully considered the related texts in the current CXS 234-1999 and would like to provide the view that several requirements in Appendix VIII directly address the determination of salt saturation, such *as Part 1: Preparation of Fish Samples, Part 3: Determination of Water Content*, and the *Annex to Appendix VIII: Determination of Water Content in Whole Fish by Cross Section Method*. These requirements are important for determination of salt saturation. Therefore, we consider that **these requirements should be directly reflected in the proposed Appendix VIII and also propose to retain the texts without modification**.

Additionally, we have an observation that, based on the new title of Appendix VIII, the newly proposed Part 1 may appear to limit the scope of sample preparation solely for the determination of salt and water content for the purpose of calculating % salt saturation. This may not cover cases where salt content is determined using methods that meet the numeric performance criteria in Table ** for purposes other than calculating % salt saturation. Moreover, we note that the *Codex Standard for Salted Fish and Dried Salted Fish of the Gadidae Family of Fishes (CXS 167)* specifies that the products shall be preserved by partial salt saturation to a salt content not less than 12 percent by weight of the salted fish. In this context, we would like to seek clarification on whether the sample preparation for methods meeting the numeric performance criteria for salt content determination should also be stipulated.

Proposal of Thailand

Thailand proposes the retention of method of analysis of salt saturation and the footnote xii that describes the calculation formula of salt saturation. Also, the retention should be covered to Part 1 of preparation of samples in Appendix VIII as it specifies to the determination of salt saturation which is a provision of the commodity standard.

Moreover, due to the additional observation on preparation of samples for salt content determination mentioned above. Thailand understands that these issues are technical. Therefore, we propose the Commission to retain the texts we proposed and send it back to CCMAS for consideration.

In this regard, the texts proposed to retain as the following details:

PART A – METHODS OF ANALYSIS BY COMMODITY CATEGORIES AND NAMES

Commodity	***Provision***	***Method***	***Principle***	***Type***
~~Salted Atlantic herring and salted sprat and sturgeon caviar~~	~~Determination of salt content~~	~~See Appendix VIII~~		
Salted fish and dried salted fish of the Gadidae family of fishes	Salt saturation	See equation in footnote[xii]	Calculation	I

[xii] The % salt saturation is calculated as follows:
1. % salt in water = (% salt content / (% salt content + % moisture)) x 100%
2. % salt saturation = (% salt in water / 26.4 %*) x 100%

* The solubility of sodium chloride in water is 36 g per 100 g water, and the constant is calculated as follows: 36 g sodium chloride / (100 g water + 36 g sodium chloride) x 100% = 26.4%

APPENDIX VIII

PREPARATION OF FISH SAMPLES AND DETERMINATION OF ~~SALT AND~~ WATER CONTENT IN FISH AND FISHERY PRODUCTS

PART 1: PREPARATION OF FISH SAMPLES

Salted fish and dried salted fish of the Gadidae family of fishes

1. Before preparing of a subsample adhering salt crystals should be removed by brushing from the surface of the sample without using water.

2. The preparation of fish samples for the determination of salt content, and water content in order to calculate the % salt saturation of the fish should be carried out according to AOAC 937.07. The analysis should be on the edible portion of the fish.

3. Determination should be performed at least in duplicate.

PART ~~3~~2: DETERMINATION OF WATER CONTENT

Salted fish and dried salted fish of the Gadidae family of fishes

i) Determination of % salt saturation as required by the standard, should be in accordance to AOAC 950.46.B (air-drying (a)).

ii) Determination of water content in the whole fish, when needed in the commercial trade of klippfish and wet salted fish, the method of sampling the fish should be carried out according to the “Determination of water content in whole fish by cross section method” defined in the annex to this appendix.

Salted Atlantic herring and salted sprat

Determination of water content is performed according to AOAC 950.46B (air-drying).