

CODEX ALIMENTARIUS COMMISSION



Food and Agriculture
Organization of the
United Nations



World Health
Organization

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Agenda item 4.2

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ORIGINAL LANGUAGE ONLY

**JOINT FAO/WHO FOOD STANDARDS PROGRAMME
CODEX COMMITTEE ON METHODS OF ANALYSIS AND SAMPLING**

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13 – 18 May 2024

**REVIEW OF METHODS OF ANALYSIS IN CXS 234
FISH AND FISHERY PRODUCTS WORKABLE PACKAGE**

Comments in reply to CL 2024/15-MAS

submitted by

*Australia, Brazil, Ecuador, Egypt, Guatemala, Indonesia, Iraq, Jamaica, Japan, Norway,
Panama, Paraguay, Peru, Philippines, Sierra Leone, United Arab Emirates and NMKL, USP*

Background

1. This document compiles comments received through the Codex Online Commenting System (OCS) in response to CL 2024/15-MAS issued in February 2024. Under the OCS, comments are compiled in the following order: general comments are listed first, followed by comments on specific sections.

Explanatory notes on the appendix

2. The comments submitted through the OCS are hereby annexed and presented in tabulated format.

ANNEX**GENERAL COMMENTS**

COMMENT	MEMBER / OBSERVER
<p>The following Australian comments relate to submissions to the workable package and the section in CX/MAS 24/43/5 Appendix 1 page 13--15, titled "Determination of biotoxins in live and raw bivalve molluscs"</p> <p>In respect to the above section, two methods for paralytic shellfish toxins (PST) are used in Australia:</p> <ul style="list-style-type: none"> • Lawrence AOAC 2005.06 (already included in the CX/MAS 24/43/5 Table 1. Criteria for determination of toxin analogues by chemical methods). • Turner et al (2015)¹ - Single laboratory Validation), Turner et al (2020)² - Collaborative Study; with both articles free from publisher's website. Where the Turner et al (2020) 'Table 28. Comparison of mean method performance of LC-MS/MS method with precolumn LC-FLD, precolumn LC-FLD, and RBA' includes validation data for methods from Turner et al (2015) plus data for methods which became AOAC 2005.06 and AOAC 2011.02. While we appreciate 'References to articles should be avoided' we consider this validated method a worthy inclusion. <p>In Australia, we use the method by Villar-Gonzalez et al. 2011 for diarrhetic shellfish toxins (DST) and this method (as an initial screen) plus AOAC 991.26 for domoic acid (DA).</p> <p>With respect to the suggestion to the eWG - "Standards AOAC 2005.06 and EN 14526 quantify gonyautoxin 1 and 4 together (GTX1,4; sum of isomers), gonyautoxin 2 and 3 together (GTX2,3; sum of isomers), decarbamoyl gonyautoxin 2 and 3 together (dcGTX2,3; sum of isomers), Nsulfo carbamoyl- gonyautoxin 1 and 2 together (C1,2; sum of isomers) and N-sulfo carbamoyl gonyautoxin 3 and 4 together (C3,4; sum of isomers). Consequently, these toxins are to be listed as pairs and not individually."</p> <p>Australia disagrees with this comment and advises that not all methods report these isomer pairs as a sum, and for this reason it would be better not to list them as pairs (as has been done in CX/MAS 24/43/5).</p> <p>Also, against the CX/MAS 24/43/5 text "Information on TEFs could be incorporated in this standard at a future date", there had been the suggestion to the eWG "We suggest recommending the more recent and relevant TEFs agreed by the Expert Group in the Joint FAO/WHO Technical Paper 'Toxicity Equivalency Factors for Marine Biotoxins Associated with Bivalve Molluscs (2016)'. "</p> <p>In response, Australia acknowledges that this FAO/WHO Technical Paper is available on the FAO website (https://www.fao.org/documents/card/en/c/89196cd6-d970-49ee-8823-61f3a866fd64/) as stated. However, we would not support incorporation of TEFs or a specific report at this time, and if necessary, suggest/list a website rather than a specific paper to allow the information to be updated as more analogues are added to the TEF list, or new information comes to light (as has been done in CX/MAS 24/43/5).</p> <p>¹ Turner et al (2015), Single-Laboratory Validation of a Multitoxin Ultra-Performance LC-Hydrophilic Interaction LC-MS/MS Method for Quantitation of Paralytic Shellfish Toxins in Bivalve Shellfish, Journal of AOAC International Vol. 98, No. 3, p609-21</p> <p>² Turner et al (2020), Ultrahigh-Performance Hydrophilic Interaction Liquid Chromatography with Tandem Mass Spectrometry Method for the Determination of Paralytic Shellfish Toxins and Tetrodotoxin in Mussels, Oysters, Clams, Cockles, and Scallops: Collaborative Study, Journal of AOAC International Vol. 103, No. 2, p533-62.</p>	<p>Australia</p>

<p>El Perú agradece al Grupo trabajo electrónico [GTE] presidido por Noruega, por el esfuerzo emprendido a la fecha que se encuentra plasmado en el documento CX/MAS 24/43/5 y en atención a la Carta Circular CL 2024/15-MAS Revisión de los métodos de la norma CXS 234-1999:</p> <p>Solicitud de observaciones sobre el conjunto manejable de pescado y productos pesqueros; los miembros de la Comisión Técnica Nacional del Codex, presenta los siguiente comentarios específicos: Comentarios Específicos: El Perú ha examinado el Apéndice I del informe CX/MAS 24/43/5, asimismo hemos revisado los cambios propuestos en CXS 234, y ha considerado las recomendaciones propuestas, y sugerencia de métodos pertinentes cuando se recomienda sustituciones, y se aprueba los cambios propuestos al documento CXS 234-1999, conforme al siguiente detalle para cada una de las entradas del apéndice I:</p>	Peru
<p>Ecuador ratifica los cambios propuestos a CXS 234, y está de acuerdo con las recomendaciones, ya que se ha realizado el reemplazo por métodos actualizados y que no utilicen sustancias químicas peligrosas, se invita a CCFFP, que revise las sugerencias propuestas en el GTE, con la finalidad de que los métodos sean adecuados al fin previsto</p>	Ecuador
<p>Brazil appreciates the opportunity to provide comments on methods of analysis for fish and fishery products as requested in CL 2024/15-MAS.</p> <p>We agree to the review of Appendix I and endorsement of the recommended revisions of CXS 234. Regarding the methods listed in Appendix I of CX/MAS 24/43/5, we support the recommendation to delete ISO 21807 as it was replaced by ISO 18787. We point out that the principle can be electrometry or dew point.</p> <p>We also support the electronic working group's recommendations to the CCFFP listed in para. 8, iii, of CX/MAS 24/43/5. In relation to the bullet points “a” and “b”, we understand that preference should be given to adopt the parameter determined by the referred method, i.e., “moisture”. Regarding bullet point “c”, we agree with the recommendation to rephrase the wording as “For the calculation of % salt saturation, the determination of moisture should be carried out according to AOAC 950.46B (Airdrying (a)).</p>	Brazil
<p>Jamaica supports the use of the following method: H.J. van den Top, A. Gerssen, P. McCarron, H.P. van Egmond. Quantitative determination of marine lipophilic toxins in mussels, oysters and cockles using liquid chromatography-mass spectrometry: inter-laboratory validation study. Food Additives & Contaminants: Part A , 2011, Vol. 28, Iss. 12</p> <p>For CXS 292-2008, Jamaica supports the prohibition of the mouse bioassay technique to facilitate the analysis of Paralytic Shellfish Toxins</p>	Jamaica
<p>Agree</p>	Iraq
<p>Sierra Leone agrees with the recommended changes</p>	Sierra Leone

Panama agrees with the advancement to its next step in the Codex Committee in reference.	Panama
Egypt appreciates the work which done in the revision of methods in CXS 234 - 1999 (fish and fishery products workable package) & agrees on it.	Egypt

SPECIFIC COMMENTS

Number 1: Fish and fishery products – Histamine (AOAC 977.13)	
The Philippines supports the deletion of the method since the method performance criteria applies and there are CCFA Standards that refer to AOAC 977.13	Philippines
Perú está de acuerdo con la propuesta del GTE	Peru
En caso de eliminar esta fila, no queda bien definido a qué tipo de metodología corresponde.	Paraguay
Se recomienda aceptar la modificación al método AOAC 978.02, ya que no utiliza mercurio como catalizador, para la determinación de nitrógeno total en salsa de pescado.	Guatemala
Number 2: Fish and fishery products – Mercury (AOAC 977.15)	
The Philippines request to retain AOAC 977.15 for the provision of mercury in fish and fish products as the equipment used for the method is widely available and it is also being used in the Philippines. If no validation data is available, Type IV is suggested. Inclusion of the method as Type IV would allow countries to use this method if the EN 16801 / NMKL 202 method is not available.	Philippines
Perú tiene interés en mantener la metodología a pesar de no tener LMR para el mercurio Sugerimos mantenerlo porque se solicita en la regulación nacional este requisito	Peru
En caso de eliminar esta fila, no queda bien definido a qué tipo de metodología corresponde.	Paraguay
Number 3: Fish and fishery products: canned products – Drained weight (Described in the Standard)	
Perú está de acuerdo con la propuesta del GTE Sugerimos mantenerlo	Peru
Number 4: Fish and fishery products: canned products – Net weight (Described in the Standard)	
Perú está de acuerdo con la propuesta del GTE Sugerimos mantenerlo	Peru
Number 5: Boiled dried salted anchovies – Sodium Chloride (chloride expressed as sodium chloride) (AOAC 937.09)	
The Philippines support the deletion of this entry as method performance criteria applies	Philippines
En el Perú este método está acreditado en matrices de productos pesqueros y acuícolas seco salado, salpresos, por lo que se solicita no retirarlo Sugerimos mantenerlo	Peru
Number 6: Canned shrimps or prawns – Size, determination of (Described in the Standard)	
The Philippines support deletion of Entry No. 6 and replacing it with the Entry No. 7 to ensure consistency in both sensory and physical determinations for all fish and fishery products. It is recommended to include this entry in the CXS 234.	Philippines
Perú está de acuerdo con la propuesta del GTE	Peru

Number 7: Fish and fishery products – Sensory and Physical Determinations (Described in the Standard)	
Perú está de acuerdo con la propuesta del GTE	Peru
Number 8: Fish sauce – Total nitrogen (AOAC 940.25; AOAC 978.02)	
NMKL suggest NMKL 6 (Nitrogen. Determination in foods and feeds according to Kjeldahl) that uses potassium sulphate or copper sulphate as catalyst	NMKL
The Philippine supports the replacement of AOAC 940.25 due to the use of hazardous chemicals, such as mercury catalysts. We also support the new method AOAC 978.02 as replacement which uses copper sulphate as catalyst.	Philippines
Perú está de acuerdo con la propuesta del GTE con el AOAC 940.25 Sin embargo, con relación al AOAC 955.04 y al AOAC 978.02 mantenemos reserva.	Peru
Number 9: Fish sauce – Amino acid nitrogen (AOAC 920.04 and AOAC 920.03 [replacement?])	
This does not appear to be the actual principle of analysis. If the test methods are updated by AOAC, perhaps they can clean up the Principle.	USP
Support to replace Surplus method with the current referred method.	Philippines
Perú está de acuerdo con la propuesta del GTE	Peru
Number 10: Fish sauce – pH (AOAC 981.12)	
The Philippine supports the change of the principle since Potentiometry is primarily used for measuring the concentration of ions or the pH of a solution. It is commonly employed in analytical chemistry for pH measurements	Philippines
AOAC 981.12 is for Acidified foods. If no validation data is available, Type IV is suggested.	
Perú está de acuerdo con la propuesta del GTE	Peru
Number 11: Fish sauce – pH (NMKL 179)	
The Philippine supports the inclusion of this entry as it is included in CXS 302-2011	Philippines
Perú se abstiene sobre este método no se tiene acceso a la metodología.	Peru
Number 12: Fish sauce – Sodium chloride (AOAC 976.18)	
The Philippine supports deletion of this entry as method performance criteria is suggested for sodium chloride.	Philippines
AOAC 937.09 is the volumetric method for sodium chloride in seafoods	
Perú está de acuerdo con la propuesta del GTE.	Peru
Number 13: Fish sauce – Sodium chloride (AOAC 937.09)	
The Philippines support the deletion as the method performance criteria has been established for these provisions	Philippines

En el Perú este método está acreditado en matrices de productos pesqueros y acuícolas seco salado, salpresos, por lo que se solicita no retirarlo	Peru
En caso de eliminar esta fila, no queda bien definido a qué tipo de metodología corresponde.	Paraguay
Number 14: Fish sauce – Histamine (AOAC 977.13)	
Perú está de acuerdo con la propuesta del GTE	Peru
En caso de eliminar esta fila, no queda bien definido a qué tipo de metodología corresponde.	Paraguay
Number 15: Frozen abalone (covered by glaze) – Net weight (AOAC 963.18)	
Perú está de acuerdo con la propuesta del GTE	Peru
Number 16: Quick Frozen Raw Scallop Products – Net weight (AOAC 963.18)	
The Philippines support the inclusion of this entry in CXS 234	Philippines
Peru está de acuerdo con la propuesta del GTE	Peru
Number 17: Quick Frozen Raw Scallop Products – Block Frozen Products – Drained weight (AOAC 967.13; or AOAC 970.60; and Described in the Standard)	
Perú está de acuerdo con la propuesta del GTE	Peru
Number 18: Frozen fish and fishery products – Thawing and cooking procedures (Described in the Standards)	
¿Convendría detallar algunos métodos? como ejemplo. Analizar su convendría aclarar en qué Norma/s está/n descripta/s?	Paraguay
Perú está de acuerdo con la propuesta del GTE	Peru
Number 19: Quick frozen blocks of fish fillet, minced fish flesh and mixtures of fillets and minced fish flesh – Proportion of fish fillet and minced fish (AOAC 988.09)	
Perú está de acuerdo con la propuesta del GTE	Peru
Number 20: Quick frozen blocks of fish fillet, minced fish flesh and mixtures of fillets and minced fish flesh – Net content of frozen fish blocks covered by glaze (Described in the Standard)	
¿Convendría detallar algunos métodos? como ejemplo.	Paraguay
Perú está de acuerdo con la propuesta del GTE	Peru
Number 21: Quick frozen blocks of fish fillet, minced fish flesh and mixtures of fillets and minced fish flesh – Sodium chloride (AOAC 971.21 (Codex general method))	
The Philippines support the deletion since the entry is not in CXS 165	Philippines
Perú está de acuerdo con la propuesta del GTE	Peru
Number 22: Quick frozen fish fillets – Net weight of products covered by glaze (Described in the Standard)	
Perú está de acuerdo con la propuesta del GTE	Peru

Number 23: Quick frozen fish fillets – [Gelatinous Condition Determined as] Moisture (AOAC 983.18 and AOAC 950.46A)	
The Philippines support the inclusion of this entry in CXS 234 and suggest changing the provision to “Moisture” as the parameter determined by the referred method.	Philippines
Perú está de acuerdo con la propuesta del GTE	Peru
Number 24: Quick frozen fish sticks (fish fingers) and fish portions – breaded or in batter – Fish content (declaration) (AOAC 996.15 and calculation (Described in the Standard))	
Perú está de acuerdo con la propuesta del GTE	Peru
Number 25: Quick frozen fish sticks (fish fingers) and fish portions – breaded or in batter – Net weight (Described in the Standard)	
Perú está de acuerdo con la propuesta del GTE	Peru
Number 26: Quick frozen fish sticks (fish fingers) and fish portions – breaded or in batter (except for certain fish species with soft flesh) – Proportion of fish fillet and minced fish (WEFTA Method (Described in the Standard))	
The Philippines support deletion of the phrase “except for certain fish species with soft flesh”, as it is not specified in CXS 166	Philippines
Perú está de acuerdo con la propuesta del GTE	Peru
Number 27: Quick frozen fish sticks (fish fingers) and fish portions – breaded or in batter – Sodium chloride (AOAC 971.27 (Codex general method))	
The Philippines support deletion as it is not specified in CXS 166	Philippines
Perú está de acuerdo con la propuesta del GTE	Peru
Number 28: Quick frozen fish sticks (fish fingers) and fish portions – breaded or in batter – [Gelatinous Condition Determined as] Moisture (AOAC 983.18 and AOAC 950.46A)	
The Philippines support the inclusion of this entry in CXS 234 and suggest changing the provision to “Moisture” as the parameter determined by the referred method	Philippines
Perú está de acuerdo con la propuesta del GTE	Peru
Number 29: Salted Atlantic herring and salted sprat [Water content Determined as] Moisture (AOAC 950.46B a) [AOAC 950.46B a) or b)?]	
Air dry oven	United Arab Emirates
Perú está de acuerdo con la propuesta del GTE así como realizar la consulta al CCFFP y a la AOAC	Peru
Number 30: Salted fish and dried salted fish of the Gadidae family of fishes – Salt content (salt determined as chloride expressed as sodium chloride) (AOAC 937.07 and Described in CXS 167-1989)	
The Philippines support the inclusion of this entry in CXS 234 and suggest changing the provision to “Moisture” as the parameter determined by the referred method	Philippines
Perú está de acuerdo con la propuesta del GTE	Peru
Number 31: Salted fish and dried salted fish of the Gadidae family of fishes – Salt Content Water; Moisture content (in the determination of % salt saturation) (AOAC 937.07 and AOAC 950.46B (airdrying a); Sampling and method Described in the Standard)	
Perú está de acuerdo con la propuesta del GTE	Peru

We suggest adding: Salt is determined as chloride and expressed as sodium chloride. The % salt saturation is calculated as follows: 1) % salt in water = (%salt / (%salt + % moisture)) x 100% 2) % salt saturation = (% salt in water / 26.4%§) x 100% Footnote to §: The solubility of sodium chloride in water is 36 g per 100 g water, and the solubility constant is calculated as follows: 36 g sodium chloride / (100 g water + 36 g sodium chloride) x 100% = 26.4%	Norway
Number 32: Salted fish and dried salted fish of the Gadidae family of fishes – Water content in the whole fish (Described in the Standard)	
Air dry oven	United Arab Emirates
The Philippines support the inclusion of this entry in CXS 234	Philippines
Perú está de acuerdo con la propuesta del GTE	Peru
Number 33: Smoked fish, smoke-flavoured fish and smoke-dried fish – Water phase salt (salt determined as chloride expressed as sodium chloride) (AOAC 952.08 and AOAC 937.09 Described in Standard * (*: % salt x 100 / (%water + %salt))	
The Philippines support the suggested revision to delete footnote as calculation is described in the Standard	Philippines
Perú está de acuerdo con la propuesta del GTE	Peru
Number 34: Smoked fish, smoke-flavoured fish and smoke-dried fish – Water activity (NMKL 168; ISO 21807)	
The Philippines support the deletion of ISO 21807 as it is withdrawn.	Philippines
Perú está de acuerdo con la propuesta del GTE	Peru
Number 35: Smoked fish, smoke-flavoured fish and smoke-dried fish – Water activity (ISO 18787)	
The Philippines support the inclusion of this entry as ISO 18787 was endorsed for commodity 'Dried Meat' at CCMAS41 as a Type II method. The method is applicable for foodstuffs	Philippines
Perú está de acuerdo con la propuesta del GTE	Peru
Number 36: Sturgeon caviar – Salt content (salt determined as chloride expressed as sodium chloride) (AOAC 937.07 and Described in CXS 167-1989)	
The Philippines support the suggested revision	Philippines
Perú está de acuerdo con la propuesta del GTE	Peru
Number 37: Live and raw bivalve molluscs – Paralytic shellfish toxicity (AOAC 959.08)	
Perú está de acuerdo con la propuesta del GTE	Peru
Number 38: Live and raw bivalve molluscs – Paralytic shellfish toxicity (AOAC 2011.27)	
Perú está de acuerdo con la propuesta del GTE	Peru
Number 39: Crackers from marine and freshwater fish, crustacean and molluscan shellfish – Crude Protein (AOAC 2001.11)	
The Philippines support the inclusion of this entry in CXS 234. The method AOAC 2001.11 is suggested as replacement for methods that used mercuric oxide.	Philippines
AOAC 2001.11 used copper sulfate as catalyst.	
Perú está de acuerdo con la propuesta del GTE	Peru

Method performance criteria for histamine for fish and fishery products	
RSDR(%) <u>RSDr(%)</u>	Indonesia
Indonesia proposes to use "RSDr(%)" instead of "RSDR(%)" which indicates repeatability relative standard deviation	
Perú está de acuerdo con la propuesta del GTE	Peru
Table 1. Criteria for determination of toxin analogues by chemical methods	
En la tabla no. 1 "Criteria for determination of toxin analogues by chemical methods" se recomiendan métodos oficiales que cumplen con los parámetros descrito. en el grupo de toxinas OA y AZA los métodos recomendados utilizan técnicas de HPLC-MS/MS los cuales podrían ser una barrera para los laboratorios nacionales debido al costo inicial de un espectrómetro de masas capaz de cumplir esto. Sin embargo, se reconoce que esto podría ser una oportunidad para la actualización de metodologías de análisis a nivel nacional.	Guatemala
It should be noted that the recovery ranges listed in the original document are in line with "Working instructions for the implementation of the criteria approach in Codex" in the Procedural Manual. Japan would like to know why the replacement of these values is proposed.	Japan
Precision (RSD_R) (%) No more than	Indonesia
STX group	
AOAC 2005.06 (HPLC-FLD), NMKL 182 (HPLC-FLD), EN 14526 (HPLC-FLD), AOAC 2011.02 (HPLC-FLD), NMKL 197 (HPLC-FLD), Turner et al (2015) J.AOAC Intn. Vol. 103, No. 2, p533-62 (uHPLC-MSMS)	Australia
Perú está de acuerdo con los métodos indicados	Peru
Jamaica's regulatory laboratory adopts this method: H.J. van den Top, A. Gerssen, P. McCarron, H.P. van Egmond. Quantitative determination of marine lipophilic toxins in mussels, oysters and cockles using liquid chromatography-mass spectrometry: inter-laboratory validation study. Food Additives & Contaminants: Part A , 2011, Vol. 28, Iss. 12. Jamaica is recommending that this method be considered for use as it meets the numerical criteria in Table 1 for the stated toxins.	Jamaica
Total toxicity is estimated as the sum of the molar concentrations of detected analogues multiplied by the relevant specific toxicity equivalency factors (TEFs). Internationally scientifically validated TEFs must be used. The science behind TEFs is developing. Current internationally validated TEF's will be found <u>are available</u> on the FAO website. Information on TEFs could be incorporated in this standard at a future date.	Australia
Current internationally validated TEF's are available on the FAO website	

Performance Criteria for methods of analysis of methylmercury*	
Para el análisis de metilmercurio se recomiendan técnicas que utilizan equipos de GC-ICP MS lo cual no es posible a nivel regulatorio ya que no se cuenta con la capacidad de implementar esta técnica actualmente. Sin embargo, se reconoce que esto podría ser una oportunidad para la actualización de metodologías de análisis.	Guatemala
Precision (RSDr) (%) To be in line with Table 1	Indonesia
GC-ICP/MS HPLC-ICP-MS	United Arab Emirates
AOAC 988.11 ? Japan would like to know the meaning of these question marks.	Japan
GC-electron capture GC-ICP/MS HPLC-ICP-MS	United Arab Emirates
Performance criteria for methods of analysis of sodium chloride determined as chloride*	
Precision (RSDr) (%) To be in line with Table 1	Indonesia
Potentiometric titration En el Perú los métodos AOAC 971.27 y AOAC 937.09 están acreditados en matrices de productos pesqueros y acuícolas seco salado, salpessos por lo que estamos de acuerdo con la propuesta.	Peru