

# CODEX ALIMENTARIUS COMMISSION



Food and Agriculture  
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Agenda Item 2

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**JOINT FAO/WHO FOOD STANDARDS PROGRAMME**  
**CODEX COMMITTEE ON FATS AND OILS**  
**Twenty-Seventh Session**  
**Virtual, 18 - 26 October 2021**  
**MATTERS REFERRED TO CCFO27 BY CCMAS41**  
(Prepared by Netherlands and USA)

CCMAS is undertaking a review of CXS234 to make necessary adjustments in the fitness for purpose and typing of the methods in the view of current insights. Editorial adjustments were also taken in areas, such as where there were omissions or overlapping information.

CCFO is asked to provide specific feedback on the following matters to guide further work on the review on the methods considered for endorsement. To help guide CCFO, the following provides background and guidance on the suitability of methods related to each of the questions found in the Matters Referred CX/FO 21/27/02. For your convenience, these questions are included in this document.

*Matters Referred: CX234*

- *CCMAS41 agreed to inform other relevant Codex Committees of the ongoing work on the revision of the General Guidelines on Sampling and invite any comments as relevant.*
- *Delegates to CCFO27 are requested to liaise at national level to provide comments on the CXG 50-2004 when it goes out for comment*

**Appendix II (Part 4.3):**

These changes represent primarily editorial changes, such as the replacement of the word “and” with the “/”, which align with the notations used in CXS 234. Other editorial changes, such as *Fat Content to Total Fat*, align the provision in CXS 234 with the provision in the commodity standard.

*Matters Referred: Arsenic in Edible Oils and Fish Oils*

- *CCMAS noted that for fish oils, methods for arsenic should determine inorganic arsenic. Currently there is not a provision for inorganic arsenic in fish oil and therefore no numeric criteria have been developed and no applicable methods have been endorsed.*
- *CCMAS also noted, the criteria approach could be considered for the methods for determination of total arsenic in fats and oils (all) and inorganic arsenic in fish oils*
- *and agreed to request CCFO to consider the criteria approach, and that pending feedback from CCFO, criteria could be developed, if a provision exists, by the EWG for consideration by the next session.*

**Arsenic in Edible Oils and Fish Oil**

The general standard for contaminants and toxins in food and feed (CXS 193, pg 45) contains a provision for both total arsenic (0.1 mg/kg) for edible fat and oils and a discussion for the use of inorganic arsenic in fish oils, which uses the same ML (0.1 mg/kg).

The numeric criteria for total arsenic and inorganic arsenic would be identical (Table 1), because the ML is the same for both analytes. However, given the potential complexities of methods which analyze for inorganic arsenic, the endorsement of a method and not numeric criteria would be beneficial.

JRC Method IMEP-41 is a straightforward method that has undergone multi-laboratory validation in numerous matrices and would be fit for purpose for the determination of inorganic arsenic in fish oils. Note that fish oil was not one of the matrices used in the collaborative study. However, running a specific matrix is not required and the use of a multiple matrices across a variety of food types in the collaborative study makes the validation of the method specifically in fish oil unnecessary.

Table 1: numeric criteria for total arsenic

Analyte	Arsenic
Matrix/provision	Edible fats and oils
ML	0.1 mg/kg
Lower level of min. application range	$\leq 0.032 (= ML - 2S_R)$
LOD	$\leq 0.01 \text{ mg/kg} (= ML \cdot 1/10)$
LOQ	$\leq 0.02 \text{ mg/kg} (= ML \cdot 1/5)$
Precision	For concentration at 0.1 mg/kg, the $RSD_R \leq 45.2\%$
Recovery	80-110
Trueness	Use of a CRM

*Matters Referred: Fats and oils – synthetic antioxidants*

- *What would be the trade impact on the retyping of one of 2 (two) proposed methods for determination of synthetic antioxidants in fats and oils. It was noted that AOCS and ISO are collaborating to produce identical methods to replace AOCS Ce-6-86 by 2023.*

### Synthetic antioxidants

Currently, both methods have been listed as Type II in CXS 234. After its review, the EWG came to the conclusion that the listed methods are not identical and therefore one must be typed as Type II and the other as Type III. Regarding whether there would be a trade impact that would produce a preference of which should be the Type II, AOCS Ce 6-86 seems to be the more widely used method and is currently undergoing update in coordination with ISO. This makes it a better alternative for the Type II method.

Methods	Recommendation
AOCS Ce 6-86	Type II
AOAC 983.15	Type III

*Matters Referred: Fish Oils – fatty acid composition*

- *What would be the trade impact on the retyping of the methods AOCS Ce 2-66 and AOCS Ce 1i-07 for fatty acid composition in fish oils as Type II;*
- *Consider the trade impact of retyping the ISO methods to Type III*

### Fatty acid composition in Fish Oil

Methods	Recommendation
AOCS Ce 2-66 and AOCS Ce 1i-07	Type II
AOCS Ce 2-66 and AOCS Ce 1a-13	Removal: AOCS Ce 1a-13 is not fit for purpose for

	fish oils
AOCS Ce 2b-11 and AOCS Ce 1i-07 or AOCS Ce 1j-07	Type III
ISO 12966-2 and ISO 12966-4	Type III
AOCS Ce 1b 89	Type III

*Matters Referred: Named animal fats – fatty acid composition and titre*

- *What would be the impact for trade when endorsing the AOCS methods for Type II? and*
- *Noting that the methods currently listed in CXS 234 for titre, ISO 935 and AOCS Cc 12-59 were not identical and therefore cannot both be Type I methods and noting that ISO 935 is more “fit for purpose”, what would be the trade impact on retyping the ISO method as Type I. AOCS Cc 12-59 is proposed as Type IV.*

### **Fatty acid composition in Named Animal Fats**

Both the AOCS and the ISO methods were listed as Type II in CXS 234, whilst the EWG concluded that the methods are not identical. The Canadian delegation of CCMAS has suggested to replace AOCS Ce 1f-96 with Ce 1j-07 and to retype the other methods, including the ISO methods, to Type III. It was unclear to CCMAS what would be the impact of this change and therefore the advice of CCFO is asked.

Method	Recommendation
Ce 2-66 and Ce 4f-96 1j-07	Type II
Ce 2-66 and Ce 1f-96	Type III
ISO 12966-2 and ISO 12966-4	Type III

### **Titre in Named Animal Fats**

Both the methods listed in CXS 234 were Type I methods, while the EWG review indicated that the methods are not identical. There can be only one Type I method listed for each commodity and provision (unless complementary or identical). No other Type II or Type III methods can be listed for same commodity and provision. For the titre determination, the EWG recommended the ISO method to be remained as Type I, as it is more fit for purpose. However, CCMAS could not determine what is the impact on trade when retyping the AOCS method to Type IV.

Method	Recommendation
ISO 935	Type I
AOCS Cc 12-59	Type IV

*Matters Referred: Named vegetable oils – Crismer value, Halphen test and unsaponifiable matter*

- *Whether the methods for Crismer value and Halphen test are still in active use; and*
- *For unsaponifiable matter, ISO 18609 is not identical to ISO 3596 and AOCS Ca 6b-53. ISO 18609 is a method which produces systematically underestimated results. What would be the impact for trade if ISO 18609 were retyped to Type IV?*

### **Crismer value and Halphen test in Named Vegetable Oils**

CCMAS could not determine if these methods are still being used. CCFO is asked to advise on this matter. When the methods are still in active use, they will remain as Type I methods in CXS 234.

**Unsaponifiable matter in Named Vegetable Oils**

The EWG concluded that ISO 18609 produces results which have a systematic underestimation due to the use of hexane as carrier solvent and should be typed as a Type IV. ISO 3596 and AOCS Ca 6b-53 are identical and use diethyl ether as carrier solvent and are therefore recommended to remain as Type I methods. However, CCMAS has recognized that the usage of diethyl ether may not be possible in certain circumstances where high environment temperatures are applicable. The usage of hexane, as in ISO 18609, is then more appropriate. CCFO is asked to advise in this matter on the usage of the ISO 18609 method and the potential impact on trade when the method is retyped to Type IV.

Although the Typing system does not allow that non-identical methods for the same provision and commodity exist next to each other as Type I, a solution can be proposed to introduce an alternative provision name for the ISO 18609.

ISO 18609 is not identical to ISO 3596 and AOCS Cs 6b-53.

Method	Recommendation
ISO 3596 / AOCS Ca 6b-53	Type I
ISO 18609	Type IV: It is known that this method produces systematically underestimated results, so removal from CXS 234 may be appropriate.