CODEX ALIMENTARIUS COMMISSION

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Food and Agriculture Organization of the United Nations

World Health Organization

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REP24/FO

JOINT FAO/WHO FOOD STANDARDS PROGRAMME

CODEX ALIMENTARIUS COMMISSION

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Responsible Party	Purpose	Text/Topic	Code	Step	Para(s)
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LIST OF ABBREVIATIONS

ADI	Acceptable daily intake
AOCS	American Oil Chemists Society
CAC	Codex Alimentarius Commission
CAS	Chemical Abstracts Service
CCEXEC	Executive Committee of the Codex Alimentarius Commission
CCFA	Codex Committee on Food Additives
CCFICS	Codex Committee on Food Import and Export Inspection and Certification Systems
CCFL	Codex Committee on Food Labelling
CCFO	Codex Committee on Fats and Oils
CCGP	Codex Committee on General Principles
CCMAS	Codex Committee on Methods of Analysis and Sampling
CL	Circular Letter
CRD	Conference room document
CXC	Codex code of practice
CXS	Codex Standard
DAGs	1,2-diglycerides
DHA	Docosahexaenoic acid
EDC	Ethylene dichloride
EPA	Eicosapentaenoic acid
ETBE	Ethyl tertiary butyl ether
EU	European Union
EWG	Electronic Working Group
FAO	Food and Agriculture Organization of the United Nations
FC	Food Category
FEDIOL	The EU Vegetable Oil and Protein meal Federation
FIA	Food Industry Asia
FOSFA	Federation of Oils, Seeds and Fats Association International
GLC	Gas-liquid chromatography
GOED	Global Organization for EPA and DHA Omega-3s
IDF	International Dairy Federation
IMACE	The European Margarine Association
INS	International Numbering System
IOC	International Olive Council
ISO	International Organisation for Standardization
iTFAs	Industrially produced Trans-Fatty Acids
IWG	In-session working group
JECFA	Joint FAO/WHO Expert Committee on Food Additives
MOAH	Mineral oil aromatic hydrocarbons
MTBE	Methyl tertiary butyl ether
NCD	Non-communicable diseases
ND	Not Detected
NRC	Non-retail containers
OCS	Online Commenting System
PHOs	Partially Hydrogenated Oils
PPP	Pyropheophytin "a"
TDI	Tolerable Daily Intake
TFAs	Trans-Fatty Acids

TORs	Terms of Reference
TS	Technical Specification
UAN	Urea ammonium nitrate solution
UV	Ultraviolet
WHO	World Health Organization
USA	United States of America

INTRODUCTION

1. The Codex Committee on Fats and Oils (CCFO) held its twenty-eighth session in Kuala Lumpur, Malaysia, from 19 to 23 February 2024, at the kind invitation of the Government of Malaysia. Ms Norrani Eksan, Senior Director for Food Safety and Quality, Ministry of Health Malaysia, chaired the session, which was attended by 36 Member Countries, one Member Organization (European Union) and 10 Observer organizations and FAO and WHO. The full list of participants is contained in Appendix I.

OPENING OF THE SESSION

2. Datuk Seri Dr Dzulkefly Ahmad, the Honourable Minister of Health, Malaysia, opened the meeting, welcoming the participants and congratulating the Committee on its great achievements in the 60 years since its establishment. He underscored the importance of standards in fats and oils to the dual mandate of Codex of protecting consumer health and facilitating fair practices in the food trade and highlighted the role of the committee in also addressing important public health issues such efforts to reduce the intake of industrially produced Trans Fatty Acids (iTFAs) and Partially Hydrogenated Oils (PHOs).

3. Mr Steve Wearne, Chairperson of the Codex Alimentarius Commission (CAC), also addressed the Committee via video message.

Division of Competence[1]

4. CCFO28 noted the division of competence between the European Union (EU) and its Member States, in accordance with paragraph 5, Rule II, of the Rules of Procedure of CAC.

ADOPTION OF THE AGENDA (Agenda item 1)[2]

5. CCFO28 adopted the provisional agenda as its agenda for the meeting and agreed to consider,

   - under Agenda item 7 (Review of the List of Acceptable Previous Cargoes (CXC 36-1987, Appendix 2)), the related issue raised by FOSFA in CRD16 Rev, and
   - under Agenda Item 9 (Other Business), possible future work on inclusion of virgin coconut oil in the *Standard for Named Vegetable Oils* (CXS 210-1999) (India), subject to the availability of time.

6. CCFO28 agreed to establish two In-session Working Groups (IWG) working in English only as follows:

   - An IWG on the revision of the *Standard for Olive oils and Oil Pomace oils* (CXS 33-1981), chaired by Spain, with the following terms of references (TORs):
     a) to consider the comments in document CX/FO 24/28/8 Add.1 and CRDs; and
     b) to prepare recommendations for consideration by the plenary.
   - An IWG on New Work Proposals chaired by the United Kingdom, with the following TORs:
     a) to screen the proposals for new work (Agenda Items 8.1 and 8.2) for completeness against the criteria in the Codex Procedural Manual regarding proposals for new work and the decision of CCFO16, taking into account written comments received from Members in relation to the proposals;
     b) to assess whether the information provided fulfils the requirements for the new work proposed and make recommendations to the plenary; and
     c) to prepare a report to be presented to the plenary to enable CCFO to make informed decisions on the work proposals.

MATTERS ARISING FROM THE CODEX ALIMENTARIUS COMMISSION AND OTHER SUBSIDIARY BODIES (Agenda item 2)[3]

Matters for information

7. CCFO28 noted the information from CAC44, CAC45, CAC46, CCEXEC81, CCEXEC82, CCEXEC83, CCEXEC84 and CCEXEC85; CCMAS42, CCFL47, CCFICS26 and CCGP33.

8. With regard to the request of CCEXEC83 that committees have due regard to ongoing global efforts to achieve health and nutrition goals when prioritizing and undertaking new work or reviewing standards, the Chairperson highlighted that CCFO has indeed been supporting this global effort to provide healthier options to the population to reduce non-communicable diseases (NCD) risk factors. CCFO has ongoing work to meet this

[1] CRD01 (Division of competence between the European Union and its Member States)
[2] CX/FO 24/28/1; CRD07 (Burundi, India, United Republic of Tanzania); CRD16 Rev (FOSFA)
[3] CX/FO 24/28/2; CRD06 (Codex and CCFO Secretariats); CRD07 (Burundi, Kenya, Thailand, United Republic of Tanzania); CRD21 (Bangladesh); CRD29 (Uganda); CRD31 (East African Community)

demand for healthier oils which has resulted from the introduction of new varieties of fats and oils from plants, animals and marine origin.

9. The WHO Representative acknowledged the contribution that CCFO had made so far in enhancing healthfulness of fats and oils, which is the case for this committee meeting too, where CCFO will be discussing trans-fat elimination as proposed new work. In addition to trans fat, there are other nutrients of concern, for example sodium. In 2013, the World Health Assembly endorsed the Global Action for the prevention and control of NCD. One of the targets agreed by the Member States was a 30% relative reduction in population intake of salt/sodium by 2025. However, despite efforts made by countries, the mean sodium intake remains high. There are different ways in which CCFO could contribute to sodium reduction, for example, promoting reformulation (reduce the sodium content of fats and oils products) through CCFO standards. Many countries have set national salt targets for pre-packaged foods including fats and oils products such as salted butter, butter blends, margarine, other oil-based spreads, emulsion-based dips and dressings. WHO has also published the global sodium benchmarks for different kinds of pre-packaged foods. Against this background, the representative of WHO requested that CCFO, when prioritizing and undertaking its work, consider how it could further contribute to achieving the global goal to reduce the NCD risk factors such as intakes of sodium intake, as well as sugars and saturated fatty acids.

Matters for action

Labelling provisions for non-retail containers in existing and draft standards

10. In response to the request by CAC44, to the Commodity Committees to review the labelling provisions for non-retail containers (NRC) in existing standards in light of the new *General Standard for the Labelling of Non-Retail Containers* (CXS 346-2021) and the consequential amendment to the Procedural Manual, CCFO28 endorsed the proposed amendments to the labelling provisions for NRC as presented in CRD06.

Methods of analysis

11. CCFO28 considered the matters related to methods of analysis and:

    a) agreed to consider the revision to the methods of analysis in *Standard for Olive oils and Olive Pomace oils* (CXS 33-1981) under Agenda Item 5; and

    b) noted the information presented in CRD06 Part B, that the method for the determination of gamma oryzanol in rice bran oil in the *Standard for Named Vegetable oil* (CXS 210-1999) had not been reviewed by CCMAS since it was never transferred to the standard on *Recommended methods of analysis and sampling* (CXS 234-1999). CCFO noted the need to consider whether this method was still fit for purpose and if so, to request CCMAS to include it in CXS 234-1999; or that an alternative method be proposed for endorsement by CCMAS and inclusion in CXS 234-1999.

Food additives

12. CCFO28 discussed the requests from CCFA53 on the technological justification for the following food additives in fats and oils:

    a) Chlorophylls (INS 140) in FC 02.1.2: use in vegetable oils to restore natural colour lost in processing or for the purpose of standardizing colour, including in virgin, cold pressed, and other oils covered by *Standard for Edible Fats and Oils not Covered by Individual Standards* (CXS 19-1981), and especially for that purpose in vegetable oils for deep frying.

13. CCFO28 agreed that there was no technological justification for the use of chlorophylls (INS 140) on products conforming to CXS 19-1981, as their use could mislead consumers about the quality and authenticity of vegetable oils especially virgin and cold pressed oils. The standard CXS 19-1981 does not permit the use of additives in virgin or cold pressed oils. The colour of chlorophyll will be rapidly lost from vegetable oil during deep frying.

    b) Paprika extract (INS 160(c) (ii) in FC 02.2.2: use and use level in products conforming to the *Standard for Dairy Fat Spreads* (CXS 253-2006) and *Standard for Fat Spreads and Blended Spreads* (CXS 256-1999).

14. CCFO28 also agreed that there was no technological justification for the use of Paprika extract (INS 160(c) (ii)) in products conforming to CXS 256-1999; and the *Standard for Dairy Fat Spreads* (CXS 253-2006) was outside the purview of CCFO.

Conclusion

15. CCFO28 agreed:

i. to forward for adoption by CAC47, the draft amendments to the labelling provisions of non-retail containers in the six existing fats and oils standards (Appendix II); and inform the Codex Committee on Food Labelling (CCFL) accordingly.

ii. to defer discussions on the method for the determination of gamma oryzanol in rice bran oil transcribed in the *Standard for Named Vegetable Oils* (CXS 210-1999) to CCFO29; and to request the Codex Secretariat to issue a Circular Letter (CL) to collect information on whether the method for the determination of gamma oryzanol in rice bran oil transcribed in CXS 210-1999 was still "fit for purpose" and should be included in the standard CXS 234-1999; and if there was alternative method(s) that could be proposed for endorsement by CCMAS and inclusion in CXS 234-1999.

iii. to forward the responses on technological justification for the use of Chlorophylls (INS 140) in FC 02.1.2 and Paprika extract (INS 160c (ii) in FC 02.2.2 as described in paragraph 13 and 14; and

iv. that the request from CCEXEC83 in paragraph 25 of CX/FO 24/28/02 i.e. to give due regard to ongoing global efforts to achieve health and nutrition related goals through reducing non-communicable diseases (NCD) risk factors would be taken into account when considering new standards or during the review of standards relating to composition of foods.

CONSIDERATION OF THE RECOMMENDATIONS OF THE REPORTS OF THE 90TH AND 91ST MEETINGS OF THE JOINT FAO/WHO EXPERT COMMITTEE ON FOOD ADDITIVES (JECFA) (Agenda item 3)[4]

16. The Representative of FAO presented the outcome of the JECFA evaluation noting that the JECFA recommendations covered two aspects:

- revising criterion no. 2 in the *Code of Practice for the Storage and Transport of Edible Fats and Oils in Bulk* (CXC 36-1987) as adopted by CAC 34 (2011); and
- the outcome of the JECFA safety evaluation of 23 substances that may occur as previous cargoes.

Revising criterion no.2

17. The Representative highlighted that based on the data on consumption of fats and oils by infants and young children, JECFA concluded there were no health concern for the general population from dietary exposure to previous cargo chemical substances if the Acceptable Daily Intake (ADI) or Tolerable Daily Intake (TDI) was sufficiently protective, for example, the ADI or TDI was greater than, or equal to 0.3 mg/kg bw per day, and therefore proposed revising the criterion to reflect this value for the ADI or TDI.

18. The Representative further noted that JECFA indicated that for substances for which there was no numerical ADI or TDI, the criterion indicates these should be evaluated on a case-by-case basis. Where there were additional sources of dietary exposure to the previous cargo chemical substances, they should be considered in the exposure assessment.

JECFA safety evaluation of 23 substances for acceptability as previous cargoes.

19. The FAO Representative informed CCFO28 that JECFA concluded that 19 out of the 23 substances evaluated met the criteria for acceptability as previous cargoes (ref. CX/FO 21/27/3 Rev). For the other 4 substances, JECFA concluded that they do not meet the criteria for acceptability as a previous cargo for edible fats and oils. Specifically, in the case of montan wax and non-food-grade calcium lignosulfonate there was not sufficient chemical and toxicological information to allow the evaluation of the substances as shipped, and for acetic anhydride and cyclohexane, JECFA could not reach a conclusion on the safety of transporting these substances as a previous cargo for edible fats and oils due to insufficient chemical information regarding the nature and quantities of impurities that those substances may contain.

Discussion

Inclusion of 19 substances evaluated that met the criteria for acceptability as previous cargoes

20. In considering the acceptance of the 19 substances that met the criteria for acceptability as previous cargoes, CCFO28 agreed to maintain these in the List of Acceptable Previous Cargoes (Appendix II of CXC 36-1987), but with the following considerations regarding five of these substances.

[4] CX/FO 24/28/3; CX/FO 24/28/3 Add.1; CRD08 (Burundi, Saudi Arabia, United Republic of Tanzania); CRD21 (Bangladesh); CRD22 (Nigeria); CRD29 (Uganda); CRD31 (East African Community)

Mineral oil, medium and low viscosity, class II and class III

21. Some Members noted that in their view these substances should only be included if they contained no quantifiable levels of mineral oil aromatic hydrocarbons (MOAH), with one proposal to specify in the list that these were food grade. The FAO Representative clarified that the JECFA evaluation was conducted under the assumption that mineral oil products shipped as previous cargoes are highly refined-food-grade products free of MOAH and assumed that the tank and associated pipework had been cleaned according to defined standards, inspected and considered clean and dry. In addition, negligent or fraudulent practices were not considered to be part of the criteria identified necessary to determine the acceptability of a previous cargo.

22. The Chairperson further clarified that this was in line with the first criterion in CXC 36-1987 and in line with the discussion, CCFO28 agreed to include “highly refined-food-grade” in parenthesis after the names of these two substances and confirmed their inclusion in the List of Acceptable Previous Cargoes (Appendix II of CXC 36-1987)

Tridecyl alcohol, myristyl alcohol and unfractionated fatty alcohol mixture or mixtures of fatty alcohols from natural oils and fats

23. One Member Organization indicated that they could only support inclusion of these three substances in the list if it was indicated that their sources were edible types of fats and oils. The FAO Representative clarified that JECFA did not specify the sources of those substances in its evaluation. Edible sources are included in the assessment; however, the assessment was not limited to those only. JECFA did not raise safety concerns associated with the source of the substances. Given the JECFA evaluation that there were no source-specific safety concerns, another Member noted that indicating that limiting to only food grade versions of these substances was not appropriate at this time, also as the meeting had no access to data on the potential trade impact of such a restriction.

24. CCFO28 agreed that these substances be maintained in the list without any specificity as to their source.

25. The European Union expressed their reservation to maintaining tridecyl alcohol, myristyl alcohol and unfractionated fatty alcohol mixture or mixtures of fatty alcohols from natural oils and fats in the list without specifying that these substances should be food grade.

Four substances that did not meet the criteria for acceptability as previous cargoes

Montan wax

26. Considering the outcome of the JECFA assessment and information provided to CCFO28 that this substance was not shipped in large quantities, CCFO agreed to remove this substance from the list.

Non-food-grade calcium lignosulfonate

27. Recalling that JECFA could not complete an assessment of this substance due to insufficient chemical and toxicological data, one Member indicated that they had a sponsor that could provide a full suite of information to enable re-evaluation of this substance. The FAO Representative highlighted the need for CCFO to submit a new request to JECFA for re-evaluation of this substance together with details of the data sponsor, their contact details, confirmation that the data meet the recommendations of JECFA and date of availability of the data.

Acetic anhydride

28. Members noted the explanation by JECFA regarding concerns on the safety of this substance and to the potential genotoxicity of the impurities, with one Member further noting that this was a hazardous substance banned in some jurisdictions. The FAO Representative clarified that JECFA indicated that there was uncertainty concerning the purity or “grade” of acetic anhydride that was transported as a previous cargo. Since acetic anhydride may contain impurities, which are potentially genotoxic, JECFA could not reach a conclusion on the safety of transporting acetic anhydride as a previous cargo for edible fats and oils until the nature and quantities of these impurities have been clarified. One Member suggested to retain this on the list, proposing that an updated footnote be added to this substance to indicate that it was still under review pending definition and assessment of impurities.

Cyclohexane

29. The FAO Representative explained that there was uncertainty concerning the purity or “grade” of cyclohexane that would be transported as a previous cargo. Since cyclohexane may contain carcinogenic impurities in amounts that could significantly increase dietary exposure, JECFA could not reach a conclusion on the safety of transporting cyclohexane as a previous cargo for edible fats and oils until the nature and the quantities of these impurities in cyclohexane has been clarified. One Member suggested to retain this on the list, pending further evaluation by JECFA upon availability of data.

Prioritization and data availability for re-evaluation

30. The FAO Representative encouraged the Committee to create a priority list of substances to the report of this meeting including information on the sponsor interested to provide chemical and toxicological information, the contact details, confirmation that the data meet the recommendations of JECFA and date of availability of the data.

31. CCFO28 confirmed that non-food-grade calcium lignosulfonate was of the highest priority and that acetic anhydride and cyclohexane were of a lower priority, that data was available for re-evaluation of calcium lignosulfonate and encouraged Members to start collecting the data indicated by JECFA as necessary to complete the assessment of acetic anhydride and cyclohexane and provide an update to future sessions CCFO to facilitate the revision of the priority list.

Revision of Criterion 2 on whether a substance is acceptable as an immediate previous cargo.

32. CCFO28 agreed with the proposed revision by JECFA to change Criterion 2 to indicate that the ADI or TDI should be greater than 0.3 rather than 0.1 mg/kg body weight per day and to add a sentence to the end of the criterion to indicate that "Where there are additional sources of dietary exposure to the previous cargo chemical substances, they should be considered in the exposure assessment".

Conclusion

33. CCFO28:

i. agreed to maintain the 18 existing substances and add a new substance i.e. ethyl tertiary butyl ether (ETBE) assessed by JECFA as acceptable previous cargoes in the List of Acceptable Previous Cargoes in Appendix II, CXC 36-1987; remove the associated footnote to the existing substances indicating that these were under review by FAO and WHO; and include the words "highly refined-food-grade" after Mineral oil, medium and low viscosity, class II and class III.

ii. agreed to remove Montan wax from the List of Acceptable Previous Cargoes in Appendix II, CXC 36-1987.

iii. agreed to maintain calcium lignosulfonate with the footnote "pending further evaluation by JECFA".

iv. agreed to maintain acetic anhydride and cyclohexane in the list with the footnote updated to read "under review pending submission of data on impurities".

v. agreed to revise criterion 2 to replace the ADI or TDI of 0.1 mg/kg body weight per day with 0.3 mg/kg body weight per day and the addition of a sentence at the end of criterion 2 as follows: "Where there are additional sources of dietary exposure to the previous cargo chemical substances, they should be considered in the exposure assessment".

vi. agreed to forward these revisions to the *Code of Practice for the Storage and Transport of Edible Fats and Oils in Bulk* (CXC 36-1987) for adoption by CAC 47 (Appendix III Part A).

vii. confirmed non-food-grade calcium lignosulfonate as the highest priority for re-evaluation and requested JECFA to undertake a re-evaluation of the acceptability of this substance as a previous cargo noting that the necessary data were already available (Appendix IV); and

viii. encouraged Members to collect data on the impurities associated with acetic anhydride and cyclohexane in line with the data gaps identified by JECFA and provide an update on data availability to future sessions of CCFO to facilitate review of the priority list.

PROPOSED DRAFT AMENDMENT/REVISION TO THE *STANDARD FOR NAMED VEGETABLE OILS* (CXS 210-1999) (Agenda item 4)

INCLUSION OF AVOCADO OIL (Agenda item 4.1)[5]

34. Recalling that CAC45 has adopted the proposed draft revision to the *Standard for Named Vegetable Oils* (CXS 210-1999) on the inclusion of avocado oil at Step 5 and agreed to extend the timeline for completion of the work to CCFO28, the CCFO Chairperson invited CCFO28 to focus on the outstanding issues identified at CCFO27.

35. Mexico, as Chair of the EWG, and the United States of America as co-Chair expressed appreciation to all who had contributed to the work and noted that the work of the EWG combined with the comments received in response to the Circular Letter provided a good basis for completion of the work on Avocado Oil.

[5] CX/FO 24/28/4; CX/FO 24/28/4 Add.1; CRD09 Rev (Burundi, European Union, Ghana, India, Kenya, New Zealand, Russian Federation, United Republic of Tanzania, FEDIOL); CRD22 (Nigeria); CRD23 (Uruguay); CRD27 (Senegal); CRD29 (Uganda); CRD31 (East African Community)

Discussion

Table 3: Levels of desmethylsterols in crude avocado oil from authentic samples as a percentage of total sterols.

Beta-sitosterol

36. One Member proposed to reduce the lower value of the range for beta-sitosterol from 79 to 75 as in their view that would be more representative of the production. However, it was noted that beta-sitosterol was important in the authentication of avocado oil and the proposed value was based on an extensive data set reviewed by the EWG. Given the general support to retain the proposed lower value at 79, CCFO28 agreed to a range of 79.0 to 93.4 for beta-sitosterol.

Delta-7-stigmastenol

37. CCFO28 considered a proposal to lower the upper value of the range for delta-7-stigmastenol from 1.5 to 1.0. The EWG co-Chairs noted that the upper value of 1.5 was agreed by the EWG, following extensive review of the available data and discussions with stakeholders, and was considered a good compromise which was also supported by data. CCFO28 agreed to retain the upper level at 1.5.

"Others" and footnote for Clerosterol

38. CCFO28 agreed to:

- increase the upper limit for the range of clerosterol from 2.0% to 2.5%, (included as a footnote to Table 3) noting this better reflected authentic avocado oil from different parts of the world; and
- move the reference to the footnote from the provision "Others" in the table to "Avocado oil" (i.e. name of the oil) at the top of the table to avoid any confusion between the range for "Others" which was ND – 2.0% and the range for clerosterol (1.0 – 2.5%), since in the case of Avocado oil, unlike other oils in CXS 210-1999, a separate range was provided for clerosterol, and it was not included under "Others".

39. It was further noted that it was important to ensure that this footnote appeared under Table 3 when eventually transferred into CXS 210-1999 and that for clarity it would be useful if existing footnotes also appeared under all relevant tables and not just Table 1 to facilitate ease of use of the Standard.

Total Sterols

40. With regard to the range for Total sterols it was agreed to extend the range from 3500 – 6500 mg/kg to 3000 – 7500 mg/kg, noting that data from different production regions showed a larger range of total sterols and this increase better reflected the range of total sterols that could be found in authentic avocado oil.

Table 4: Levels of tocopherols and tocotrienols in crude avocado oils from authentic samples (mg/kg)

41. CCFO28 agreed with the ranges for tocopherols and tocotrienols levels presented in Table 4 with the exception of delta-tocopherol where the upper range was increased from 50 to 70 to better reflect authentic avocado oil from different regions.

Other issues

42. Several Members noted that new data were emerging to indicate that further changes may be needed to Table 1 (in particular - C16:0, C18:1 and C18:2) and Table 3 (campesterol) to better reflect the composition of authentic avocado oil from new growing regions. The Chairperson noted that new data on commodities, including avocado oil, will become available from time to time. However, noting that CCFO should complete its work on avocado oil at this session, CCFO28 agreed with the proposal of the Chairperson that, rather than reopening previously agreed provisions at this stage, Members should continue to collect data; and that proposals for revision to Table 1 and Table 3 could be considered at future sessions of CCFO.

43. One Member, noting that cis-vaccenic acid (C18:1 n7) was a potential unique parameter that could be used to authenticate avocado oil, which as a high value product was at risk of adulteration, encouraged Members to also collect data on this isomer of C18:1 as part on their data collection efforts on the fatty acid profile of avocado oils, so that the potential incorporation of this parameter could be considered by a future session of CCFO.

Conclusion

44. CCFO28 agreed to forward the draft amendment/ revision to the *Standard for Named Vegetable Oils* (CXS 210-1999), inclusion of avocado oil to CAC47 for adoption at Step 8 (Appendix V).

INCLUSION OF CAMELLIA SEED OIL (Agenda item 4.2)[6]

45. China, as the Chair of the EWG, introduced the item and outlined the changes made to the proposed draft standard (CX/FO 24/28/5, Annex I) after considering the comments received in response to CL 2023/58/FO and those contained in the relevant CRDs as follows:

- Section 2.1: Product definition - deletion of *C. oleifera var. meiocarpa* as it was a variant of *C. oleifera* that has been covered in the definition;
- Section 3: Essential Composition and Quality Factors: Table 1 - revision of the fatty acid ranges of C17:1 and C22:0 from ND to ND – 0.1, Appendix: Table 2: revision of the range for saponification value (lower limit) from 188-199 to 187-199; and
- Appendix Table 4 - revision of the lower limit for beta-tocopherol and delta-tocopherol from 0 to ND and the range of total tocopherols and tocotrienols from 70-1000 to 100-1000.

46. The EWG further noted that all proposed provisions were based on data on oils from the species identified in the product definition and that camellia seed oil, when compared to other oils, had relatively higher values for delta-7-stigmastenol. The EWG Chair noted that these changes were contained in CRD19 Annex I.

47. CCFO28 agreed to use CRD19 as the basis for its discussions.

Discussion

2. Description

2.1 Product Definitions

48. A Member proposed the addition of *C. japonica* in the definition as camellia seed oil derived from the seeds of this species was produced and traded internationally. The Member further expressed their willingness to provide, in the future, data on essential composition and quality factors for Camellia seed oil derived from *C. japonica* should need arise.

49. CCFO28 agreed with the proposal to add *C. japonica* and endorsed the revised draft product definition in Section 2.1.

3. Essential composition and quality factors and Appendix – Other quality and composition factors

50. CCFO28 endorsed all the draft provisions in Section 3.1 (essential composition and quality factors) Table 1, and the Appendix (Other quality factors and composition factors) – Table 2 (Chemical and physical characteristics of crude camellia seed oil), Table 3 (Levels of desmethylsterols in crude camellia seed oil from authentic samples) and Table 4 (Levels of tocopherols and tocotrienols in crude camellia seed oil from authentic samples).

Conclusion

51. CCFO28 agreed to forward the proposed draft amendment/revision to the *Standard for Named Vegetable Oils* (CXS 210-1999) - inclusion of camellia seed oil to CAC47 for adoption at Step 5/8 (Appendix VI).

INCLUSION OF SACHA INCHI OIL (Agenda item 4.3)[7]

52. Peru, as the Chair of the EWG, introduced the item and outlined the changes made to the proposed draft standard (CX/FO 24/28/6, Annex 1) after considering the comments received in response to CL 2023/59/FO and those contained in the relevant CRDs as follows:

- Section 2.1 Product definition – the different processing methods were deleted from the definition to ensure consistency with the approach to definitions in CXS 210-1999.
- Section 3.1 – GLC ranges of fatty acid composition - the statement regarding the levels of linolenic acid and linoleic acid was deleted to align the section with CXS 210-1999.
- Table 1 – fatty acids C11:0 and C15:0 along with their proposed values of ND were deleted as these are not included in Table 1 of CXS 210-1999; and the fatty acid ranges for C18:1, C18:2, C18:3 were adjusted based on comments received;

[6] CX/FO 24/28/5; CX/FO 24/28/5 Add.1; CRD10 (Burundi, Ghana, India, Japan, Kenya, Peru, Republic of Korea, Russian Federation, United Republic of Tanzania); CRD19 (China – EWG Chair); CRD23 (Uruguay); CRD29 (Uganda); CRD31 (East African Community)

[7] CX/FO 24/28/6; CX/FO 24/28/6 Add.1; CRD11 (Burundi, Ghana, India, Kenya, Russian Federation, United Arab Emirates, United Republic of Tanzania); CRD24 (Peru – EWG Chair); CRD29 (Uganda); CRD31 (East African Community)

- Appendix, Table 2 - The lower value of the range of the saponification value was amended to 185 from 189 (mg KOH/g oil); while in case of the iodine value, the range was changed to 182-205, based on data and comments received; and
- Editorial and formatting revisions were also made to align the draft standard with CXS 210-1999.

53. The EWG Chair noted that these changes were contained in CRD24, and CCFO28 agreed to use this as the basis for discussions.

Discussion

54. CCFO28 considered the revised proposed draft provisions for sacha inchi oil section by section (CRD24), noted the changes and endorsed all the provisions.

Conclusion

55. CCFO28 agreed to forward the Proposed draft amendment/revision to the *Standard for Named Vegetable Oils* (CXS 210-1999), inclusion of sacha inchi oil to CAC47 for adoption at Step 5/8 (Appendix VII).

INCLUSION OF HIGH OLEIC ACID SOYA BEAN OIL (Agenda item 4.4)[8]

56. The United States of America, as the Chair of the EWG, introduced the item and highlighted that the EWG report in document CX/FO 24/28/7 Annex 1 had been updated based on the comments received in response to CL 2023/60/FO together with those contained in the relevant CRDs as follows:

- Section 2.1: Product definition was amended to include the designation “soybean oil – high-oleic acid”;
- Section 3: Essential Composition and Quality Factors: Table 1 - GLC ranges of fatty acid composition; the range of C18:2 was revised from 1.0 - 12.0 to 1.0 - 16.0;
- Appendix, Table 2, the temperature x=20°C was inserted to the provision for relative density (x °C/water at 20°C); and
- Various editorial amendments were also made to the different provisions in the proposed draft standard with view to ensure consistence with similar provisions in CXS 210-1999.

57. The EWG Chair noted that the changes were contained in CRD26, and CCFO28 agreed to use this as the basis for discussions.

2. Description

2.1 Product Definitions

58. CCFO28 agreed to the proposed product definition and endorsed the provision.

3.1 GLC ranges of fatty acid composition (expressed as percentages)

59. In response to a proposal to delete or move the provision “High-oleic acid soya bean oil must contain not less than 65 percent oleic acid (as a percentage of total fatty acids)” from Section 3.1 to Section 2.1 (Product definition), the Codex Secretariat explained that according to CXS 210-1999, Section 3.1 describes the compositional requirements and that the transfer of the description would be inconsistent with the approach used to-date in CXS 210-1999 with regard to the fatty acid composition of oils which have been included in the standard in more than one designation (e.g. normal and high oleic acid varieties).

60. CCFO28 endorsed the statement on compositional requirements for high-oleic acid soya bean oil in Section 3.1.

3. Essential composition and quality factors and Appendix – Other quality and composition factors

61. CCFO28 endorsed all the proposed draft provisions in Section 3.1 (essential composition and quality factors) in Table 1, and the Appendix (Other quality factors and composition factors) – Table 2 (Chemical and physical characteristics of crude vegetable oils), Table 3 (Levels of desmethylsterols in crude vegetable oils from authentic samples as a percentage of total sterols) and Table 4 (Levels of tocopherols and tocotrienols in crude vegetable oils from authentic samples (mg/kg)).

Conclusion

62. CCFO28 agreed to forward the proposed draft amendment/revision to the *Standard for Named Vegetable Oils* (CXS 210-1999) - inclusion of high oleic acid soya bean oil to CAC47 for adoption at Step 5/8 (Appendix VIII).

[8] CX/FO 24/28/7; CX/FO 24/28/7 Add.1; CRD12 (Burundi, Ghana, India, Kenya, Republic of Korea, Russian Federation, United Arab Emirates, United Republic of Tanzania); CRD21 (Bangladesh); CRD22 (Nigeria); CRD23 (Uruguay); CRD27 (Senegal); CRD29 (Uganda); CRD31 (East African Community)

PROPOSED DRAFT REVISION TO THE *STANDARD FOR OLIVE OILS AND OLIVE POMACE OILS* (CXS 33-1981): REVISION OF SECTIONS 3, 8 AND APPENDIX (Agenda item 5)[9]

63. Spain, Chair of the EWG and IWG, introduced the item, highlighting the broad outcome of the discussions of the IWG as contained in CRD03, noting that the discussions focused on only the outstanding issues including Oleic acid; Uncertainty measurement of the Trans fatty acids; the footnote associated to sterols; organoleptic characteristics for virgin oils and methods of analysis.

64. The Chairperson proposed that the Committee should focus its discussions on the above highlighted outstanding issues.

3.2.1 GLC ranges of fatty acid composition

- **C18:1 (Oleic acid)**

65. Discussions on the GLC ranges for C18:1 focused on the two proposed lower values for Oleic acid i.e. 53 and 55. Some Members, supported lowering the value to 53 noting that this was necessary to reflect authentic olive oil from different production regions. Other Members supported the value of 55 explaining that this value was enshrined in their legislation and that this value was important for ensuring authenticity of olive oil. While supporting the value of 55, others recognised the need to have a standard that was inclusive of all authentic olive oil due to geographical factors and climatic factors and in the spirit of compromise endorsed the value of 53. CCFO28 agreed to the proposed lower value of 53 for this parameter.

- **Uncertainty measurements for Trans fatty acids**

66. CCFO28 endorsed the recommendation of the IWG to maintain the two decimal places for uncertainty measurements for this parameter.

3.2.3 4α-Desmethylsterols composition (% total 4α-desmethylsterols)

- **Footnote regarding sterols**

67. CCFO28 discussed the footnote indicating that “Virgin olive oil's authenticity is not compromised if one sterol, or their minimum content, does not fall within the ranges provided for if all other sterols and parameters tested referred to in this standard fall within the stated range”. Some Members were of the view that this footnote was essential to ensure that the standard did not exclude authentic olive oils coming from different regions. Others were opposed to the inclusion of such a footnote noting that it made assumptions that all sterols were equally relevant with regard to determination of authenticity, which was not the case, and it could allow adulterated oils to meet the standard and such footnotes should not be included until further studies were available to better inform their content.

68. Noting that there was no agreement on the new footnote, an alternative proposal was considered in relation to the provision for campesterol and its associated footnote on sterols for virgin olive oils. The proposal included increasing the upper limit for campesterol from 4.0% to 4.8% in both the table and in the decision tree (in footnote b) so as to ensure that this parameter fit all authentic olive oils produced under different geographical and climatic factors. The aim of the proposal was also to make the application of the related decision tree (in footnote b) optional.

69. CCFO28 exchanged a range of views on this proposal with some Members supporting, others opposing and others noting that while it was not their preference, they could accept it in the spirit of compromise. Concerns were expressed that increasing the value for campesterol in the table to 4.8, without adequate review of the data, was too large an increase and could not be accepted by some Members. However, they acknowledged that the upper value in the associated decision tree (in footnote b) could be increased to 4.8% in order to accommodate all authentic oils that fell outside the set limit of 4.0%. Concerns were also expressed that having a decision tree no longer made sense as the upper value in the table was 4.8%.

70. One Member noted that the decision tree (in footnote c) related to delta-7-stigmastenol levels should also be revised to better reflect authentic olive oils from all regions.

71. Following an extensive discussion on whether to maintain the value of 4.0% or adjust it to 4.8%, the Chairperson noted that there was a lack of consensus to change the values for campesterol in the table and proposed that the current value (i.e. 4.0%) be maintained. It was further proposed that based on the discussions, the values for the upper levels for campesterol in the decision tree (in footnote b) be changed from ≤ 4.5% to ≤ 4.8% in order to accommodate authentic virgin and extra virgin olive oils. Additional edits were made to the footnote for clarity.

[9] CX/FO 24/28/8; CX/FO 24/28/8 Add.1; CRD03 (Report of the in-session working group on olive oils); CRD04 (Spain – EWG Chair); CRD13 (Burundi, Ghana, India, Russian Federation, United Arab Emirates, United Republic of Tanzania, MoniQA Association); CRD14 (Canada); CRD20 (Syrian Arab Republic); CRD21 (Bangladesh); CRD22 (Nigeria); CRD23 (Uruguay); CRD25 (Peru); CRD29 (Uganda); CRD30 (Morocco); CRD31 (East African Community)

72. CCFO28 agreed to the amended decision tree in footnote b as follows:

> "(b) When a virgin or extra virgin olive oil naturally has a campesterol level > 4.0% and ≤ 4.8%, it may be considered authentic if the stigmasterol level is ≤ 1.4% and the delta-7-stigmastenol level is ≤ 0.3%. The other parameters shall meet the limits set out in the standard."

73. Reflecting on the discussion and the importance of additional data to facilitate any future evidence-based decisions on sterol levels and the associated decision trees (in footnotes b and c), the Chairperson encouraged all Members and Observers to undertake further studies on these aspects which could then be considered at a future session of the CCFO. It was proposed that an EWG could be established to examine the results of these studies.

74. Syria expressed their reservation to this decision as it did not recognize that some authentic olive oils fell outside of the table and its associated decision trees in relation to delta-7-stigmastenol.

3.3.1 Organoleptic characteristics of virgin olive oils

- **Virgin olive oil**

75. CCFO28 considered two values for the median of most perceived defect for virgin olive oil; less than or equal to 2.5 which is the value in the current standard and less than or equal to 3.5 which was the proposed revised value to include the uncertainty of the measure calculated by the IOC method. There were divergent views on this, with some Members highlighting the importance of maintaining the value of 2.5 in the interest of consumer protection, while others considered that 3.5 was more appropriate as it accounted for uncertainty associated with the method. In the spirit of compromise CCFO28 agreed to retain the original value of 2.5 but with the addition of a footnote (i) to indicate that this did not include the uncertainty of the measure calculated by the IOC method.

76. One Member highlighted that for consistency with this decision, the lower value for ordinary virgin olive oil should also be maintained at 2.5. In this regard, CCFO noted that the value of 2.5 for ordinary virgin olive oil was the value in the current standard. The Chairperson highlighted that any discussion with regard to the ordinary virgin olive oil had been deferred to CCFO30 as agreed during CCFO27.

Appendix 1 - 1.5 1,2-diglycerides (% total diglycerides) and 1.6 Pyropheophytin "a" (% total chlorophyll pigments)

77. The inclusion of new provisions for 1,2-diglycerides (DAGs) and Pyropheophytin "a" (PPPs) was an area of extensive debate in the revision of the standard with some Members highlighting the value of these additional provisions in terms of consumer protection while others were of the view that these provisions were not an accurate reflection of the quality of extra virgin and virgin olive oils. Some Members proposed that more data were needed in order to assess the appropriateness of these parameters and it was noted that although data needs were also highlighted in earlier sessions of CCFO, these had not led to concerted efforts to collect such data.

78. Noting that there was a clear divergence of views on these quality parameters, CCFO recognised that more time and effort would be needed to give adequate consideration to their potential inclusion. While some Members proposed retaining reference to the use of these parameters in the Appendix, pending data review, others were of the strong view that it was premature to include any reference to these parameters in the standard, although they acknowledged that, if possible, the relevant methods should be included in the section on methods of analysis to promote harmonized approaches to data collection.

79. In order to move forward on this issue, CCFO28 agreed on the need for a concerted effort to formally collect data on the use of DAGs and PPPs as quality parameters, and undertake an expert assessment of that data. The Representative of FAO indicated their willingness to consider any request from the committee for support to undertake an expert review, reiterating the importance of data collection from a broad range of Members and stakeholders.

80. CCFO28 thus agreed on the following way forward:

- Issue a Circular Letter to all Codex Members and Observers requesting the data necessary to enable a full consideration of the potential inclusion of DAGs and PPPs as quality parameters;
- Establish an EWG to assess completeness of the data and report on progress to CCFO29;
- Determine the need to establish an independent expert group to review the data at CCFO29, and acknowledged the willingness of FAO to consider a request in this regard; and
- Consider whether or not to include such parameters, in the standard, at CCFO30, according to the outcome of the EWG and expert review of the data.

81. CCFO further encouraged Members and relevant international organizations and Observers to undertake studies in order to ensure submission of adequate data in response to the Circular letter and that it would facilitate a full consideration of these potential quality parameters.

82. The Observer for the International Olive Council (IOC) informed CCFO of its long-term collaboration with Codex over the past 60 years to facilitate fair international trade for olive oil and olive pomace oil through providing scientific support in carrying out necessary scientific studies and technical support on discussions, including on aspects related to DAGs and PPP, and in these studies both IOC members and non-members were included. It was also stressed that the organisation remained available to carry out any additional scientific studies and to collaborate closely with CCFO to solve this or any other technical issue.

8. Methods of Analysis and Sampling

- **1,2-diglycerides (% total diglycerides) and Pyropheophytin "a" (% total chlorophyll pigments)**

83. CCFO28 discussed whether to retain the methods of analysis for DAGs and PPP in section 8 and in the Appendix noting the absence of the provisions for these two parameters in the standard. CCFO confirmed the need to generate data for olive oil and olive pomace oil produced in different geographical and climatic regions that would support the further consideration of these parameters by CCFO30. While CCFO acknowledged that methods should only be forwarded to CCMAS when there was an associated provision, Members strongly recommended that these methods be included in the standard to promote the use of these specific methods in generating comparative data. Some Members also noted that they were already using these parameters at national level, and including these methods would promote harmonization. It was agreed to insert a footnote indicating “This method is retained pending review in CCFO29 and CCFO30” should be associated to the methods for DAGs and PPP.

84. CCFO28 endorsed all the updated methods of analysis in section 8 and in the Appendix (Section 3), including the ISO and IOC methods for DAGs, and the ISO method for PPP as in CRD03, and agreed to forward the list of methods to CCMAS along with the explanation in paragraph 83 for the exceptional circumstances related to the inclusion of methods of analysis for DAGs and PPP in the standard.

Conclusion

85. CCFO28 agreed to:

i. forward the draft revised *Standard for Olive oils and Olive Pomace oils* (CXS 33-1981) (Appendix IX) to CAC47 for adoption at Step 5/8;

ii. forward the revised Methods of Analysis for olive oils and olive pomace oils (Section 8 and Section 3 of the appendix) to CCMAS for endorsement, noting that a review of the parameters DAGs and PPP is ongoing;

iii. establish an Electronic Working Group (EWG), chaired by Italy and co-chaired by USA, Saudi Arabia, Australia, and Canada, working in English only, with the following Terms of Reference:

   a) To collect global scientific data and information for olive oil on: free fatty acids, fatty acid ethyl esters, acidity, peroxides and sensory defects, taking also into account the influence of time, temperature, light exposure, UV exposure and oxygen exposure on the values of PPP and 1,2-DAG on individual samples;

   b) To assess the collected data and information for suitability and make recommendations to CCFO on the need and process for further analysis; and

   c) To submit the report of the EWG on the collected data at least three (3) months before CCFO29.

iv. request the Codex Secretariat to issue a Circular Letter (CL) requesting for data and information on the parameters identified in paragraph 85(iii) above; and

v. inform FAO that a request for expert consultation to review available data on DAGs and PPP would be defined by CCFO29 based on available data and the outcome of the EWG.

86. In light of the need to elaborate a standard that embraces olive oils and olive pomace oils produced in the different geographical areas and taking into account the impact of climate change on composition of the olive oil produced in different geographical regions, CCFO28 agreed to inform CCEXEC that during the review of the *Standard for Olive oils and Olive Pomace oils* (CXS 33-1981), the need for collection and analysis of data that allows for assessment of the suitability of some of the parameters in CXS 33-1981 was identified. To undertake the data collection and analysis, while also noting that the revision of many aspects of the standard had been completed and forwarded to CAC for adoption, CCFO agreed to request CCEXEC for an extension of the project timeline to CCFO30 for the completion of further work on CXS 33-1981, including ordinary olive oil as agreed by CCFO27, and DAGs and PPP as agreed by CCFO28.

PROPOSED DRAFT AMENDMENT/REVISION OF THE *STANDARD FOR FISH OILS* (CXS 329-2017): INCLUSION OF CALANUS OIL (Agenda item 6)[10]

87. Norway, as the Chair of the EWG, introduced the item and outlined the process of the EWG which included two rounds of consultations. During the consultations, there was general agreement on the description; the GLC ranges for fatty acid composition; other essential compositional criteria; and the methods of analysis as presented in document CX/FO 24/28/9 (Appendix I).

88. The EWG Chair emphasized that CXS 329-2017 applies to fish oils that are used in food and food supplements where those are regulated as foods, and it does not apply to foods or food supplements themselves. The standard was also intended for the verification of specific fish oils and for the performance of quality control and authentication of fish oils for trade purposes.

89. The EWG Chair noted that changes had been made to the proposed draft standard (CX/FO 24/28/9 Appendix I) after considering the comments received in response to CL 2023/62/FO and those contained in relevant CRDs. These changes were contained in CRD05 which CCFO28 agreed to use as the basis for its discussions.

Discussion

90. A Member Organization requested the inclusion of safety-related specifications (e.g. astaxanthin esters levels) in the proposed draft standard, as well as guidance on the conditions under which calanus oil may be used, noting that calanus oil contains astaxanthin, a substance with an established acceptable daily intake (ADI) in their region. The Member Organization recalled that among its members, calanus oil was only authorised in food supplements (excluding food supplements for infants and young children), up to different maximum levels established for different age groups and subject to additional labelling requirements.

91. The EWG Chair, while noting the Member Organization's concerns, reiterated its view that provisions linked to food supplements as regulated by specific Members were outside the scope of CXS 329-2017. Norway, as Chair of the EWG, in reply to the comments from a Member Organisation regarding the values of wax esters and peroxide value noted that the plenary discussions were not preliminary discussions, and that these had already taken place in an active EWG.

92. Noting that food safety provisions are included within the scope of CXS 329-2017 and that the scope of the standard includes fish oils used in food and in food supplements where those are regulated as foods, CCFO28 agreed to consider safety-related specifications by introducing additional provisions to the proposed draft standard after discussing the provisions in Sections 2, 3 and 8.

93. CCFO28 considered the provisions in the proposed draft standard section by section.

2. Description

94. CCFO28 endorsed the description - 2.1.6 *Calanus oil* is derived from the species *Calanus finmarchicus*. Calanus oil consists mainly of wax esters.

3. Essential composition and quality factors

Section 3.1: GLC ranges of fatty acid composition

Table 1

95. CCFO28 agreed on the provisions for calanus oil in the table, with editorial amendments to C20:5 (n-3) Eicosapentaenoic acid and C22:1 (n-11) Cetoleic acid.

Section 3.2: Other essential compositional criteria

Provision on the minimum content of wax esters in calanus oil

96. In response to a Member Organization's proposal to increase the minimum content of wax esters in calanus oil from 80 w/w% to 85 w/w% to align with its specifications, the EWG Chair explained that the value of 80 w/w% was agreed by the EWG based on the available data.

97. CCFO28 endorsed the provision – "For calanus oil (2.1.6) the content of wax esters shall be at least 80 w/w %." – in Section 3.2 (Other essential compositional criteria).

[10] CX/FO 24/28/9; CX/FO 24/28/9 Add.1; CRD05 (Norway); CRD15 Rev (Burundi, European Union, Ghana, Peru, Russian Federation, United Arab Emirates, United Republic of Tanzania); CRD21 (Bangladesh); CRD22 (Nigeria); CRD29 (Uganda); CRD31 (East African Community)

Section 3.3 Quality Parameters

Section 3.3.2: Proposal to include a statement of oils with high wax ester content

98. CCFO28 endorsed the addition of the provision "and fish oils with a high wax ester concentration of 80% or more such as calanus oil (Section 2.1.6)" – in Section 3.3.2.

Section 3.3.2: Provisions for peroxide value

99. A Member Organization proposed to revise the peroxide value for calanus oil from ≤ 5 milliequivalent of active oxygen/kg oil to ≤ 3 milliequivalent of active oxygen/kg oil to align with its specifications. Recalling that the provision ≤ 5 milliequivalent of active oxygen/kg oil already existed in CXS 329-2017, it was noted that this proposed revision would need to be placed under a new section to ensure that it only applied to calanus oil and not other fish oils with high phospholipid concentrations.

100. Based on consideration of additional data which indicated that the original value was reflective of the range of calanus oil, CCFO agreed to retain the original peroxide value for fish oils of ≤ 5 milliequivalent of active oxygen/kg oil.

8. Methods of Analysis and Sampling

101. The EWG Chair confirmed that the only method which had been validated for calanus oil was the AOCS method. Some Observers encouraged the EWG Chair to further investigate the use of method ISO/TS 23647:2010 for wax esters in fish oils. The value of sharing statistical data which would facilitate the review of the method by CCMAS was highlighted. CCFO28 agreed to forward the AOCS Ch 8-02 method for endorsement by CCMAS.

- **Safety-related provisions on astaxanthin**

102. To address the concerns from a Member Organization on the safe levels of intake of astaxanthin, the EWG Chair proposed to add two provisions to the proposed draft standard. The committee exchanged views on the additional provisions and endorsed the following, noting that Section 3.5 will be a proposed new section in CXS 329-2017:

- **Section 3.5: Other compounds** – Maximum levels of astaxanthin in calanus oil (Section 2.1.6) shall comply with regulations of the country of retail sale; and
- **Section 7.3: Other labelling requirements** – For calanus oil (Section 2.1.6), the maximum intake level of astaxanthin shall be declared if required by the country of retail sale in accordance with the acceptable daily intake established for different age groups by competent authorities.

Conclusion

103. CCFO28 agreed to:

i. advance the proposed draft amendment/revision to the *Standard for fish oil*s (CXS 329-2017): Inclusion of Calanus oil (Appendix X) to CAC47 for adoption at Step 5/8;

ii. forward the method for the determination of wax content for endorsement by CCMAS; and

iii. forward the labelling provision related to astaxanthin for endorsement by CCFL.

REVIEW OF THE LIST OF ACCEPTABLE PREVIOUS CARGOES (APPENDIX II TO CXC 36-1987) (Agenda Item 7)[11]

104. Malaysia, as Chair of the EWG, introduced the agenda item and informed the Committee that a Circular Letter (CL 2021/95/OCS-FO) had been issued inviting interested Members and Observers to propose further amendments to Appendix 2: List of Acceptable Previous Cargoes of CXC 36-1987. Ten (10) Members and one (1) Observer responded to the CL. According to responses received, there was general support for the existing List of Acceptable Previous Cargoes, along with the following relevant technical proposals submitted for consideration by the EWG: i) proposed addition of new substances such as drinks – alcoholic and non-alcoholic, dairy products, glucose and lecithin, all of which are regarded as foodstuffs; ii) addition of five new substances namely ammonium sulfate solution, cyclohexanol, cyclohexanone, wine iodines and urea; and iii) assignment of CAS numbers to three substances, i.e. fructose, hydrogen peroxide and urea ammonium nitrate solution. The EWG conducted two rounds of consultations and made recommendations for consideration by CCFO28.

[11] CX/FO 24/28/10; CX/FO 24/28/10 Add.1; CRD16 Rev (Burundi, Ghana, Peru, Russian Federation, United Arab Emirates, United Republic of Tanzania, FOSFA); CRD21 (Bangladesh); CRD22 (Nigeria); CRD29 (Uganda); CRD31 (East African Community)

Inclusion of drinks – alcoholic and non-alcoholic, dairy products, glucose and lecithin

105. CCFO28 endorsed the recommendation that drinks – alcoholic and non-alcoholic, dairy products, glucose and lecithin were regarded as foodstuffs and thus, do not need to be included in the List of Acceptable Previous Cargoes in relation to Section 2.1.3, Notes (1) and Criterion 3 of Appendix 2: List of Acceptable Previous Cargoes of CXC 36-1987.

Recommendation on inclusion of five (5) new substances

106. CCFO28 noted that, five (5) new substances namely ammonium sulfate solution, cyclohexanol, cyclohexanone, wine iodines and urea had been submitted for inclusion in CXC 36-1987 (Appendix 2: List of Acceptable Previous Cargoes). However, adequate and relevant information had not been provided to enable the EWG to assess their acceptability for inclusion into Appendix 2: List of Acceptable Previous Cargoes of CXC 36-1987. CCFO28 agreed:

a) that cyclohexanol and cyclohexanone should not be included in Appendix 2: List of Acceptable Previous Cargoes of CXC 36-1987 due to their genotoxic and carcinogenic potential as pointed out by a Member Organisation;

b) that the other three substances, i.e. ammonium sulfate solution, wine iodines and urea would only be considered after adequate and relevant information is provided by Members; and

c) to consider the above mentioned three substances when adequate data and information becomes available.

Recommendation on assignment of CAS numbers to substances already listed in Appendix 2

107. CCFO28 endorsed the recommendation to assign the respective CAS numbers to the following substances: a) Fructose: 57-48-7; b) Hydrogen peroxide: 7722-84-1; and c) Urea ammonium nitrate solution (UAN): 15978-77-5.

Consideration of issues in CRD16 Rev

108. The Chairperson of CCFO recalled that during the adoption of the agenda, it was agreed that the issues raised in CRD16 Rev would be considered under Agenda 7.

109. The Observer (FOSFA) highlighted the following three proposals, contained in CRD16 Rev, for consideration by the Committee:

a) Leaded products are extremely toxic and persistent; thus their restrictions extend beyond the immediate previous cargo to the second and third previous cargoes and these are indicated in the Banned List of Immediate Previous Cargoes in Appendix 3 of CXC 36-1987. However, on the List of Acceptable Previous Cargoes (Appendix 2), it was not clear that these extremely toxic substances are restricted beyond the immediate previous cargo to the second and third previous cargoes. There was a need to clarify these extended restrictions by inserting a note in Appendix 2 indicating that leaded products are not permitted as second and third previous cargoes on the Acceptable List. This note would enable users to effectively comply with the requirements.

b) Ethylene dichloride and styrene monomer are also extremely toxic and persistent, and they are readily absorbed into organic coated tanks, and according to studies these can be found in up to three previous cargoes. Based on scientific studies, these substances should not be carried as three previous cargoes in organic coated tanks on the List of Banned Immediate Previous Cargoes (Appendix 3). Currently the restrictions are only for up to the second previous cargo. It was proposed that a note be included in the Immediate Banned List to extend the ethylene dichloride and styrene monomer restrictions to the third previous cargo for organically coated tanks.

c) Editorial corrections and updates to Appendix 4: Bibliography with respect to the hyperlinks related to FOSFA.

110. CCFO briefly exchanged views on the proposals, noting the support for the proposals from Members that the proposed amendments to clarify Appendices 2 and 3 would enhance understanding and use of these two appendices.

111. Malaysia, as Chair of the EWG, highlighted that while Appendices 2 and 3 were separate, either one cannot be taken in isolation as they are part of CXC 36-1987 and should be read together when considering previous cargoes.

112. A view was also expressed that inclusion of a note clarifying the restriction on leaded products under Appendix 2, could lead to other banned substances being included into this Appendix.

113. With the view to ensure correct interpretation of Appendices 2 and 3, CCFO28 agreed to amend CXC 36-1987 as follows:

Section 2.1.3 Contamination

114. Inserted a new paragraph after the second paragraph as follows:

> Therefore, when considering previous cargoes for the storage and transport of edible fats and oils in bulk, Appendices 2 and 3 should be read together as part of this code.

Appendix 2 – List of Acceptable Previous Cargoes

115. Inserted the following new note after Note 2:

> Restrictions for substances beyond the immediate previous cargoes must be followed:
>
> - Leaded products shall not be carried as the 2nd or 3rd previous cargoes.
> - Ethylene dichloride and styrene monomer shall not be carried as the 2nd or 3rd previous cargoes in organically coated tanks.

Appendix 3 – List of Banned Immediate Previous Cargoes

116. Amended the footnote associated with Ethylene dichloride (EDC); 1,2-dichloroethane; ethylene chloride)* and Styrene monomer (vinyl benzene; phenyl ethylene; cinnamene) *:

> * Banned as the 2nd or 3rd previous cargoes in organically coated tanks and as the immediate previous cargo in stainless steel and inorganically coated tanks.

117. CCFO28 also endorsed the recommendation to update the relevant hyperlinks and information in Appendix 4 related to FOSFA as contained in CRD16 Rev.

Conclusion

118. CCFO28 agreed to:

i. forward for adoption, the proposed draft amendments to the *Code of Practice for the Storage and Transport of Edible Fats and Oils in Bulk* (CXC 36-1987) to CAC47 (Appendix III Part B).

ii. request the Codex Secretariat to issue a Circular Letter inviting interested Members and Observers to propose further amendments to Appendix 2: List of Acceptable Previous Cargoes of CXC 36-1987.

iii. encourage Members and Observers to submit data on ammonium sulfate solution, wine iodines and urea for future consideration as previous cargoes; and

iv. establish an EWG, led by Malaysia and working in English only, with the following Terms of Reference:

a) To consider proposals on new substances to be added to the list, provided that such proposals are supported by adequate and relevant information.

b) To prioritise substances to be submitted to FAO and WHO for evaluation.

c) To consider proposals to remove substances from the list in light of new data; and

d) To prepare a report for consideration by CCFO29 to be submitted to the Codex Secretariat at least 3 months before CCFO29, only in cases where proposals for evaluation of new substances or deletions to the lists of acceptable previous cargoes have been received in response to the CL.

CONSIDERATION OF THE PROPOSALS FOR NEW WORK AND/OR AMENDMENTS TO EXISTING CODEX STANDARDS (Agenda item 8)[12]

119. The Chairperson recalled the work management mechanism established by CCFO and that CCFO28 had established an in-session working group (IWG) to review proposals for new work. The United Kingdom, as chair of the in IWG presented the report of its deliberations, noting that the IWG concluded that both proposals were complete and suitable for further consideration by the plenary. The United Kingdom further noted that the issue of a safety assessment of the microbial omega-3 oils had been raised but it was referred to the plenary as it was not within the terms of reference of the IWG.

[12] CRD02 (Report of the in-session working group on new work proposals)

DISCUSSION PAPER ON POSSIBLE WORK THAT CCFO COULD UNDERTAKEN TO REDUCE TFAs OR ELIMINATE PHOs (Agenda item 8.1)[13]

120. Canada presented the proposal, recalling the history of discussion of trans fatty acids (TFAs) in several Codex subsidiary bodies, the recommendations of WHO with regard to TFAs reduction and noted that countries were taking different approaches to reach the WHO global target of elimination of industrially produced TFAs (iTFAs) from the global food supply. Canada highlighted that the proposal for new work focussed on three standards that had been developed by CCFO, namely, the *Standard for Edible Fats and Oils Not Covered by Individual Standards* (CXS 19-1981), the *Standard for Fat Spreads and Blended Spreads* (CXS 256-1999), and the *Standard for Named Animal Fats* (CXS 211-1999) as fats and oils covered by these standards were more commonly partially hydrogenated and contained TFAs.

121. There was general support for the new work proposal. Discussion of the proposal highlighted the need to consistently refer to iTFAs, which, Members considered to be the main objective of the work. It was also noted that countries may take different approaches to reduce iTFAs and the revision of the standard should be sufficiently flexible to reflect that, thus referring to either prohibition of PHOs or limits on TFAs. A Member Organization noted that the prohibition on PHOs alone, if relying on the definition of PHOs based on iodine value, could result in too high levels of TFAs, therefore the ban of PHOs should be in addition to legislated limits of TFAs. One Observer proposed that the focus should be on ingredients rather than end products as these would be easier to monitor; and that appropriate methods should also be considered.

122. It was also clarified that the *Standard for Named Vegetable Oils* (CXS 210-1999) was not included in the scope of the work, as this standard focuses on pure oils where partial hydrogenation was not an issue noting that if it occurs during refining, the levels remain very low.

123. The project document was revised to reflect these comments and is attached as Appendix XI.

Conclusion

124. CCFO28 agreed:

i. to submit for approval by CAC47 the proposal for new work on the proposed revisions to Codex standards on fats and oils to reduce Trans-Fatty Acid intake (Appendix XI);

ii. to establish an EWG chaired by Canada and co-chaired by Saudi Arabia, working in English, subject to the approval of new work by CAC47, to prepare the proposed draft revisions for circulation for comments at Step 3 and consideration by CCFO29; and

iii. that the report of the EWG should be made available at least three months before CCFO29.

PROPOSALS FOR NEW WORK: PROPOSAL FOR NEW WORK ON A STANDARD FOR MICROBIAL OMEGA-3 OILS (Agenda Item 8.2)[14]

125. The Global Organisation for EPA and DHA omega 3s (GOED) presented the proposal noting that omega-3 oils from single celled microalgae for human consumption were a high value commodity with both production and global trade of these oils increasing. With a high content of EPA and/or DHA these oils were an important ingredient in an increasing variety of foods and food supplements. However, the lack of an international standard for these oils, meant that the product was traded with differences in information which presented challenges for regulators. Thus, development of a Codex standard with quality and compositional factors will ensure fair practices in trade of these oils and also protect consumers health. It is proposed that the standard focuses on three distinct microbial omega-3 oils from three different species which are increasingly used in food applications.

126. There was general support for this proposal. However, a few Members indicated that as the proposal did not take into account the safety aspects of this new commodity, they could not support the proposal. It was noted that different countries have different authorization processes for such products so that should not prevent the development of a standard. Some Members also noted the need for Codex to put in place a mechanism to deal with requests for new work related to novel foods and production systems that address food safety aspects and include the necessary risk assessment.

127. With regard to the safety concerns raised, GOED noted that this product was already traded internationally and that a number of jurisdictions had evaluated safety and that there was already sufficient information with

[13] CX/FO 24/28/11; CRD17 (Burundi, Ghana, India, Japan, New Zealand, Russian Federation, Thailand, United Republic of Tanzania, FEDIOL, FIA, IDF, IMACE); CRD21 (Bangladesh); CRD22 (Nigeria); CRD23 (Uruguay); CRD28 (Malaysia), CRD31 (East African Community)

[14] CX/FO 24/28/12; CRD18 (Burundi, Ghana, India, New Zealand, Russian Federation, Saudi Arabia, United Republic of Tanzania, GOED); CRD21 (Bangladesh); CRD22 (Nigeria); CRD29 (Uganda); CRD31 (East African Community)

regard to product safety without the need to undertake an international risk assessment.

128. The Codex Secretariat clarified that the review of the project document was an opportunity for Members to add aspects they considered should be included in the proposal including the option of indicating that scientific advice was needed to support the work. It could also be identified in the course of elaboration of the standard.

129. The Codex Secretariat, reflecting on the recommendations of CAC46 regarding new work proposals, recalled that CAC46 had encouraged Members and Observers to submit new work proposals as only by addressing such proposals could Codex identify the optimum ways of working on these commodities. If new mechanisms to address aspects such as a safety assessment were needed, it could be conducted in parallel.

130. It was also discussed whether referring in the title to microbial oils as opposed to microalgae oils was appropriate. However, it was clarified that these micro-algae were unicellular eukaryotes also grown in fermentation processes, thus fitting within the understanding of microbial classification, and that there were other products under development from other micro-organisms which would fit under the proposed standard, thus facilitating future updates as new oils of microbial origin came on the market.

131. In light of the discussion, the purpose and scope of the project document was revised to also cover any potential food safety issues. Section 7 was amended to include the potential need for expert advice which may be identified in the course of the work. The timeline was simplified to indicate that the aim was to complete the work within two sessions of CCFO.

132. CCFO28 agreed:

i. to submit for approval by CAC47 the proposal for new work on a standard for microbial omega-3 oils (Appendix XII);

ii. to establish an EWG chaired by the United States of America and co-chaired by China working in English, subject to the approval of the new work by CAC47, to prepare the proposed draft standard for circulation for comments at Step 3 and consideration by CCFO29; and

iii. that the report of the EWG should be made available at least three months before CCFO29.

OTHER BUSINESS (Agenda item 9)

- **Potential future work on inclusion of virgin coconut oil in the *Standard for Named Vegetable Oils* (CXS 210-1999)** (India):

133. The Chairperson requested India to submit a new work proposal on the inclusion of virgin coconut oils in the *Standard for Named Vegetable Oils* (CXS 210-1999) by responding to the Circular Letter, which the Codex Secretariat will issue in advance of CCFO29, noting that CXS 210-1999 already contained provisions for coconut oil, as well as the processing of virgin oils, and hence may already cover virgin coconut oils.

DATE AND PLACE OF THE NEXT SESSION (Agenda item 10)

134. The Committee was informed that the 29th Session of CCFO is scheduled to be held in Malaysia tentatively from 9 to 13 February 2026, subject to confirmation by the host government in consultation with the Codex Secretariat.

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Appendix II

PROPOSED DRAFT REVISIONS TO THE LABELLING PROVISION FOR NON-RETAIL CONTAINERS IN THE RELEVANT CCFO STANDARDS

(For Adoption)

	Title	Reference number	Section	Current text	Draft Amendment
1	*Standard for Edible Fats and Oils not Covered by Individual Standards*	CXS 19-1981	6.2	**Labelling of non-retail containers** ~~Information on the above labelling requirements shall be given either on the container or in accompanying documents, except that the name of the food, lot identification and the name and address of the manufacturer or packer shall appear on the container.~~ ~~However, lot identification and the name and address of the manufacturer or packer may be replaced by an identification mark, provided that such a mark is clearly identifiable with the accompanying documents.~~	"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)."
2	*Standard for Olive Oils and Olive Pomace Oils*	CXS 33-1981	7.2		
3	*Standard for Named Vegetable Oils*	CXS 210-1999	7.2		
4	*Standard for Named Animal Fats*	CXS 211-1999	7.2		
5	*Standard for Fat Spreads and Blended Spreads*	CXS 256-1999	7.2		
6	*Standard for Fish Oils*	CXS 329-2017	7.2 Paragraphs 1 & 2		
			7.2 Paragraph 3	For crude fish oils and crude fish liver oils the label shall indicate that these oils are intended for human consumption only after they have undergone further processing.	**Note:** Paragraph 3 of 7.2 is to be retained without any changes.

Appendix III

PROPOSED REVISION TO THE *CODE OF PRACTICE FOR THE STORAGE AND TRANSPORT OF EDIBLE FATS AND OILS IN BULK* (CXC 36-1987)

(Adoption)

Proposed changes to relevant provisions are indicated in **bold** and underline, and deletions in ~~strikethrough.~~

PART A - Related to Agenda Item 3 on JECFA Recommendations

APPENDIX 2 - Codex Alimentarius List of Acceptable Previous Cargoes

List of acceptable previous cargoes

No.	Substance	CAS No.
1	Acetic anhydride (ethanoic anhydride)~~1~~[3]	108-24-7
2	1,4-Butanediol (1,4-butylene glycol)[1]	110-63-4
3	Butyl acetate, sec-[1]	105-46-4
4	Butyl acetate, tert-[1]	540-88-5
5	Cyclohexane (hexamethylene; hexanaphthene; hexahydrobenzene) ~~1~~[3]	110-82-7
6	Iso decyl alcohol (isodecanol)[1]	25339-17-7
7	Myristyl alcohol (1-tetradecanol; tetradecanol)[1]	112-72-1
8	Iso nonyl alcohol (isononanol)[1]	27458-94-2
9	Tridecyl alcohol (I-tridecanol)[1]	27458-92-0
10	Methyl tertiary butyl ether (**MTBE**)[1]	1634-04-4
~~11~~	~~Montan wax~~	~~8002-53-7~~
12	Iso-Octyl alcohol (isooctanol)[1]	26952-21-6
13	Pentane[1]	109-66-0
14	1,3-Propylene glycol[1]	504-63-2
15	Propylene tetramer (tetrapropylene; dodecane)[1]	6842-15-5
16	Soybean oil epoxidized[1]	8013-07-8
17	Mineral oil, medium and low viscosity, class II [1] **(highly refined food-grade)**	
18	Mineral oil, medium and low viscosity, class III [1] **(highly refined food-grade)**	
19	Calcium ammonium nitrate solution[1]	6484-52-2
20	Calcium nitrate (CN-9) solution[1]	35054-52-5
21	Unfractionated fatty alcohol mixture or mixtures of fatty alcohols from natural oils and fats[1]	
22	Calcium lignosulphonate liquid (lignin liquor; sulphite lye)[1]	8061-52-7
23	**Ethyl tertiary butyl ether (ETBE)**	**637-92-3**

[1] ~~under review by FAO and WHO~~ pending further evaluation by JECFA

[3] under review pending submission of data on impurities.

Section 2.1.3 Contamination

1	The substance is transported/stored in an appropriately designed system with adequate cleaning routines, including the verification of the efficacy of cleaning between cargoes, followed by effective inspection and recording procedures.
2	Residues of the substance in the subsequent cargo of fat or oil should not result in adverse human health effects. The acceptable daily intake (ADI) (or tolerable daily intake (TDI)) of the substance should be greater than or equal to ~~0.1~~ **0.3** mg/kg bw/day. Substances for which there is no numerical ADI (or TDI) should be evaluated on a case-by-case basis. **Where there are additional sources of dietary exposure to the previous cargo chemical substances, they should be considered in the exposure assessment.**
3	The substance should not be or contain a known food allergen unless the identified food allergen can be adequately removed by subsequent processing of the fat or oil for its intended use.
4	Most substances do not react with edible fats and oils under normal shipping and storage conditions. However, if the substance does react with edible fats and oils, any known reaction products must comply with criteria 2 and 3.

PART B - Related to Agenda Item 7 on Review of the List of Acceptable Previous Cargoes

Assignment of CAS Number to substances in Appendix 2 - Codex Alimentarius List of Acceptable Previous Cargoes

Substance (synonyms in bracket)	CAS Number
Fructose	**57-48-7**
Hydrogen peroxide	**7722-84-1**
Urea ammonium nitrate solution (UAN)	**15978-77-5**

SECTION 2.1.3 Contamination

Undesirable contamination may be from residues of a previous material handled in the equipment, dirt, rain, seawater or through the accidental addition of a different product. In storage installations and ships, particular difficulty may be experienced ensuring cleanliness of valves and pipelines, particularly where they are common for different tanks. Contamination is avoided by good design of the systems, adequate cleaning routines and an effective inspection service, and on ships by the carriage of oils in segregated tank systems in which the previous cargoes are included in the Codex list of acceptable previous cargoes in Appendix 2 of this code.

Contamination is also avoided by the rejection of tanks which have carried, as a last cargo, products which are included on the Codex list of banned immediate previous cargoes in Appendix 3 of this code.

Therefore, when considering previous cargoes for the storage and transport of edible fats and oils in bulk, Appendices 2 and 3 should be read together as part of this code.

Previous cargoes not on the Codex lists of acceptable or banned cargoes are only to be used if agreed upon by competent authorities of the importing countries.

Until both lists are completed, practitioners may find the lists and data referred to in the bibliography in Appendix 4 provide relevant guidance.

When determining whether a substance is acceptable as an immediate previous cargo, competent authorities should consider the following criteria:

APPENDIX 2: Codex Alimentarius List of Acceptable Previous Cargoes

Notes

(1) Where it is not possible to transport edible fats and oils in bulk in tankers reserved for foodstuffs only, the possibility of contamination incidents is reduced by carriage in tankers in which the previous cargo is included in the list below. Application of this list must be combined with: good design of the system; adequate cleaning routines; and, effective inspection procedures (see Section 2.1.3 of the code).

(2) Previous cargoes not on the list are only acceptable if they are agreed upon by the competent authorities of the importing country (see Section 2.1.3 of the code).

(3) **Restrictions for substances beyond the immediate previous cargoes must be followed;**

- **leaded products shall not be carried as 2nd or 3rd previous cargoes.**
- **ethylene dichloride and styrene monomer shall not be carried as the 2nd or 3rd previous cargoes in organically coated tanks.**

(4) The list below is not necessarily a final list but is subject to review and possible amendment to take account of scientific or technical developments. Additional substances are being considered for inclusion in the list and may be included as acceptable following an appropriate risk assessment. This should include consideration of:

- Toxicological properties, including genotoxic and carcinogenic potential (account may be taken of the opinions of the Joint FAO/WHO Expert Committee on Food Additives (JECFA) or other recognised bodies).
- Efficacy of cleaning procedures between cargoes.
- Dilution factor in relation to the potential amount of residue of the previous cargo and any impurity which the previous cargo might have contained, and the volume of oil or fat transported.
- Solubility of possible contaminating residues.

- Subsequent refining/processing of the oil or fat.
- Availability of analytical methods for the detection of trace amounts of residues or for verifying the absence of contamination.
- Reactivity of oils/fats with contaminating residues.

APPENDIX 3: Codex Alimentarius List of Banned Immediate Previous Cargoes

Footnote

*Banned as ~~any one of the last two~~ **the 2nd or 3rd previous cargoes** in organically coated tanks and as the ~~last~~ **immediate previous** cargo in stainless steel and inorganically coated tanks.

Editorial changes

Substance (synonyms in bracket)	**CAS Number**
Ethylene oxide ~~(E0)~~ **(EO)**	75-21-8

APPENDIX 4: BIBLIOGRAPHY

Federation of Oils, Seeds and Fats Associations (FOSFA International). ~~2021~~. In: *FOSFA*. London. FOSFA International List of Banned Immediate Previous Cargoes~~. NOVEMBER 1999 (fosfa.org)~~ and **FOSFA International List of Acceptable Immediate Previous Cargoes. Available at Carriage of Oils and Fats | FOSFA International**

Appendix IV

SUBSTANCES FOR EVALUATION FOR ACCEPTANCE AS PREVIOUS CARGOES

(For action by JECFA)

Name of substance	**Priority assigned by CCFO**	**Data sponsor**	**Sponsor contact details**	**Availability of data**	**Data meet the recommendations of JECFA[1]**
Non-food grade calcium lignosulfonate	High	Norway	codex@mattilsynet.no	Immediately	Yes
Acetic anhydride	Low/medium	TBD	TBD	TBD	TBD
Cyclohexane	Low/medium	TBD	TBD	TBD	TBD

TBD: to be defined

[1] For non-food grade calcium lignosulfonate JECFA recommended that at a minimum the information for re-evaluation should address the following: molecular weight range(s), chemical component identification and relative composition; toxicological data on representative products.

For acetic anhydride and cyclohexane JECFA recommended that at a minimum the information for re-evaluation should address the following: product grade(s) and composition including characterization and levels of impurities arising from all methods of manufacture.

APPENDIX V

DRAFT AMENDMENT/REVISION TO THE *STANDARD FOR NAMED VEGETABLE OILS* (CXS 210-1999): INCLUSION OF AVOCADO OIL

(Adoption at Step 8)

2. DESCRIPTION

2.1 Product definitions

Avocado oil may be derived from either the mesocarp of avocado fruit (*Persea americana*) or obtained by processing the whole avocado fruit.

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 Gas-liquid chromatography (GLC) ranges of fatty acid composition (expressed as percentages)

Samples falling within the appropriate ranges specified in Table 1 are in compliance with this Standard. Supplementary criteria, for example national geographical and/or climatic variations, may be considered, as necessary, to confirm that a sample is in compliance with the Standard.

Table 1: Fatty acid composition of avocado oil as determined by gas liquid chromatography from authentic samples *(expressed as percentage of total fatty acids)*

Fatty acid	Avocado Oil
C6:0	ND
C8:0	ND
C10:0	ND
C12:0	ND
C14:0	ND - 0.3
C16:0	11.0 - 26.0
C16:1	4.0 – 17.1
C17:0	ND – 0.3
C17:1	ND - 0.1
C18:0	0.1 - 1.3
C18:1	42.0 - 75.0
C18:2	7.8 - 19.0
C18:3	0.5 - 2.1
C20:0	ND - 0.7
C20:1	ND - 0.3
C20:2	ND
C22:0	ND - 0.5
C22:1	ND
C22:2	ND
C24:0	ND - 0.2
C24:1	ND – 0.2

ND – Non-detectable, defined as ≤ 0.05%

APPENDIX TO CXS 210-1999: OTHER QUALITY AND COMPOSITION FACTORS

3. CHEMICAL AND PHYSICAL CHARACTERISTICS

Chemical and Physical Characteristics are given in Table 2.

Table 2: Chemical and physical characteristics of crude avocado oil

Parameter	Avocado Oil
Relative density (x°C/water at 20°C)	0.910 – 0.920 (x=20°C)
Refractive Index (nD 40°C)	1.458 – 1.470
Saponification Value (mg KOH/g oil)	170 – 202
Iodine Value	78 – 95
Unsaponifiable matter (g/Kg)	≤ 19.0

4. IDENTITY CHARACTERISTICS

Levels of desmethylsterols in vegetable oils as a percentage of total sterols are given in Table 3.

Table 3. Levels of desmethylsterols in crude avocado oil from authentic samples as a percentage of total sterols.

	Avocado Oil[d]
Cholesterol	ND - 0.5
Brassicasterol	ND - 0.5
Campesterol	4.0 - 8.3
Stigmasterol	0.3 - 2.0
Beta-sitosterol	79.0 - 93.4
Delta-5-avenasterol	2.0 - 8.0
Delta-7-stigmastenol	ND – 1.5
Delta-7-avenasterol	ND – 1.5
Others	ND - 2.0
Total sterols (mg/kg)	3000 - 7500

[d] Avocado oil also contains 1.0 - 2.5% clerosterol

ND – Non-detectable, defined as ≤ 0.05%

Table 4: Levels of tocopherols and tocotrienols in crude vegetable oils from authentic samples (mg/kg) (see Appendix of the Standard)

	Avocado oil
Alpha-tocopherol	45 – 270
Beta-tocopherol	ND – 36
Gamma-tocopherol	ND – 62
Delta-tocopherol	ND – 70
Alpha-tocotrienol	ND – 20
Gamma-tocotrienol	ND – 20
Delta-tocotrienol	ND – 20
Total (mg/kg)	45 – 478

ND – Non-detectable

APPENDIX VI

DRAFT AMENDMENT/REVISION TO THE *STANDARD FOR NAMED VEGETABLE OILS* (CXS 210-1999): INCLUSION OF CAMELLIA SEED OIL

(For Adoption at Step 5/8)

2. DESCRIPTION

2.1 Product definition

Camellia seed oil (youcha oil) is derived from the seeds of cultivated *Camellia* species (*C.oleifera*, *C.chekiangoleosa*, *C. japonica* and *C.vietnamensis*).

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 Gas-liquid chromatography (GLC) ranges of fatty acid composition (expressed as percentages)

Samples falling within the appropriate ranges specified in Table 1 are in compliance with this Standard. Supplementary criteria, for example national geographical and/or climatic variations, may be considered, as necessary, to confirm that a sample is in compliance with the Standard.

Table 1: Fatty acid composition of camellia seed oil as determined by gas liquid chromatography from authentic samples (expressed as percentage of total fatty acids)

Fatty acid	Camellia seed oil
C6:0	ND
C8:0	ND
C10:0	ND
C12:0	ND
C14:0	ND-0.8
C16:0	3.9-14.5
C16:1	ND-0.2
C17:0	ND-0.1
C17:1	ND-0.1
C18:0	0.3-4.8
C18:1	68.0-87.0
C18:2	3.8-14.0
C18:3	ND-1.4
C20:0	ND-0.5
C20:1	ND-0.7
C20:2	ND
C22:0	ND-0.1
C22:1	ND-0.5
C22:2	ND
C24:0	ND
C24:1	ND-0.5

ND - Non-detectable, defined as ≤ 0.05%

APPENDIX TO CXS 210-1999 - OTHER QUALITY AND COMPOSITION FACTORS

3. CHEMICAL AND PHYSICAL CHARACTERISTICS

Chemical and Physical Characteristics are given in Table 2.

Samples falling within the appropriate ranges specified in Table 2 are in compliance with this Standard.

Table 2: Chemical and physical characteristics of crude camellia seed oil

	Camellia seed oil
Relative density (x℃/water at 20℃)	0.912-0.922 (x=20℃)
Refractive index (nD 40℃)	1.460-1.464
Saponification value (mg KOH/g oil)	187-199
Iodine value	83-89
Unsaponifiable matter (g/kg)	≤15

4. IDENTITY CHARACTERISTICS

Table 3: Levels of desmethylsterols in crude camellia seed oil from authentic samples as a percentage of total sterols

	Camellia seed oil
Cholesterol	ND
Brassicasterol	ND
Campesterol	0.5-2.1
Stigmasterol	0.3-4.6
Beta-sitosterol	16.0-60.0
Delta-5-avenasterol	0.4-4.3
Delta-7-stigmastenol	37.2-69.0
Delta-7-avenasterol	0.9-8.5
Others	0.5-5.1
Total sterols(mg/kg)	100-4000

ND - Non-detectable, defined as ≤ 0.05%

Table 4: Levels of tocopherols and tocotrienols in crude camellia seed oil from authentic samples (mg/kg)

	Camellia seed oil
Alpha-tocopherol	30-950
Beta-tocopherol	ND-11
Gamma-tocopherol	2-56
Delta-tocopherol	ND-28
Alpha-tocotrienol	13-35
Gamma-tocotrienol	5-39
Delta-tocotrienol	ND
Total (mg/kg)	100-1000

ND - Non-detectable.

APPENDIX VII

DRAFT AMENDMENT/REVISION OF THE *STANDARD FOR NAMED VEGETABLE OILS* (CXS 210-1999): INCLUSION OF SACHA INCHI OIL

(For Adoption at Step 5/8)

2 DESCRIPTION

2.1 Product definitions

Sacha inchi oil is derived from the seeds of sacha inchi (*Plukenetia volubilis* L.).

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 Gas-liquid chromatography (GLC) ranges of fatty acid composition (expressed as percentages)

TABLE 1: Fatty acid composition of sacha inchi oil as determined by gas liquid chromatography from authentic samples (expressed as percentage of total fatty acids) (see Section 3.1 of the Standard)

Fatty acid	Sacha Inchi oil
C6:0	ND
C8:0	ND
C10:0	ND
C12:0	ND
C14:0	ND
C16:0	3.6 – 4.8
C16:1	ND – 0.1
C17:0	ND – 0.1
C17:1	ND
C18:0	2.6 – 4.0
C18:1	6.0 – 11.7
C18:2	32.0 – 43.4
C18:3	36.2 – 50.0
C20:0	ND – 0.1
C20:1	ND – 0.4
C20:2	ND – 0.1
C22:0	ND – 0.1
C22:1	ND – 0.1
C22:2	ND
C24:0	ND
C24:1	ND

ND - Non detectable, defined as ≤ 0.05 %

APPENDIX TO CXS 210-1999: OTHER QUALITY AND COMPOSITION FACTORS

3. CHEMICAL AND PHYSICAL CHARACTERISTICS

Chemical and Physical Characteristics are given in Table 2.

TABLE 2: Chemical and physical characteristics of crude sacha inchi oils

Parameter	Sacha inchi oil
Relative density (x°C/water at 20 °C)	0.920 – 0.930 (x=20°C)
Refractive index (nD 40 °C)	1.478 – 1.482
Saponification value (mg KOH/g oil)	185 – 196
Iodine value	182 – 205
Unsaponifiable matter (g/kg)	≤ 5

4 IDENTITY CHARACTERISTICS

Levels of desmethylsterols in vegetable oils as a percentage of total sterols are given in Table 3.

TABLE 3: Levels of desmethylsterols in crude sacha inchi oils from authentic samples as a percentage of total sterols

	Sacha Inchi oil
Cholesterol	ND – 1.0
Brassicasterol	ND – 0.1
Campesterol	6.6 – 7.8
Stigmasterol	23.4 – 27.0
Beta-sitosterol	51.6 – 56.9
Delta-5avenasterol	4.3 – 8.7
Delta-7stigmastenol	ND – 0.3
Delta-7avenasterol	ND – 0.7
Others	ND
Total sterols (mg/kg)	2080 – 2480

ND - Non-detectable, defined as ≤ 0.05 %

TABLE 4: Levels of tocopherols and tocotrienols in crude sacha inchi oils from authentic samples (mg/kg)

	Sacha inchi oil
Alpha-tocopherol	3.0 – 7.0
Beta-tocopherol	ND – 3.0
Gamma-tocopherol	1040 – 1370
Delta-tocopherol	640 – 860
Alpha-tocotrienol	ND
Gamma-tocotrienol	ND
Delta-tocotrienol	ND
Total (mg/kg)	1683 – 2240

ND - Non-detectable.

APPENDIX VIII

DRAFT AMENDMENT/REVISION TO THE *STANDARD FOR NAMED VEGETABLE OILS* (CXS 210-1999): INCLUSION OF HIGH OLEIC ACID SOYA BEAN OIL

(For Adoption at Step 5/8)

2. DESCRIPTION

2.1 Product definitions

Soya bean oil – high-oleic acid (soybean oil – high-oleic acid; high-oleic acid soya bean oil; high-oleic acid soybean oil) is produced from high-oleic acid oil-bearing seeds of varieties derived from soya beans (seeds of *Glycine max* (L.) Merr.).

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 Gas-liquid chromatography (GLC) ranges of fatty acid composition (expressed as percentages)

High-oleic acid soya bean oil must contain not less than 65 percent oleic acid (as a percentage of total fatty acids).

Table 1: Fatty acid composition of high oleic acid soya bean oils as determined by gas liquid chromatography from authentic samples (expressed as percentage of total fatty acids)

Fatty acid	Soya bean oil (high-oleic acid)
C6:0	ND
C8:0	ND-0.1
C10:0	ND-0.1
C12:0	ND-0.1
C14:0	ND-0.5
C16:0	2.5-8.0
C16:1	ND-0.1
C17:0	ND-0.8
C17:1	ND-1.5
C18:0	3.2-5.0
C18:1	65.0-87.0
C18:2	1.0-16.0
C18:3	1.0-6.0
C20:0	ND-1.0
C20:1	ND-1.0
C20:2	ND-0.1
C22:0	ND-0.7
C22:1	ND-0.4
C22:2	ND
C24:0	ND-0.5
C24:1	ND

ND – not detectable, defined as ≤ 0.05%

APPENDIX TO CXS 210-1999 - OTHER QUALITY AND COMPOSITION FACTORS

3. CHEMICAL AND PHYSICAL CHARACTERISTICS

Table 2: Chemical and physical characteristics of crude high oleic acid soya bean oils

	Soya bean oil (high-oleic acid)
Relative density (x℃/water at 20°C)	0.909-0.923 (x=20°C)
Refractive index (nD 40°C)	1.462-1.468
Saponification value (mg KOH/g oil)	188-192
Iodine value	75-95
Unsaponifiable matter (g/kg)	≤15

4. IDENTITY CHARACTERISTICS

Table 3: Levels of desmethylsterols in crude high oleic acid soya bean oils from authentic samples as a percentage of total sterols

	Soya bean oil (high-oleic acid)
Cholesterol	0.2-0.5
Brassicasterol	0.2-0.3
Campesterol	19.9-25.2
Stigmasterol	17.3-23.0
Beta-sitosterol	42.3-51.9
Delta-5-avenasterol	1.9-3.0
Delta-7-stigmastenol	0.6-2.5
Delta-7-avenasterol	0.5-1.5
Others	4.5-7.1
Total sterols (mg/kg)	2300-3850

ND – Non-detectable, defined as ≤ 0.05%

Table 4: Levels of tocopherols and tocotrienols in crude high oleic acid soya bean oils from authentic samples (mg/kg)

	Soya bean oil (high-oleic acid)
Alpha-tocopherol	17-138
Beta-tocopherol	9-106
Gamma-tocopherol	89-1756
Delta-tocopherol	44-570
Alpha-tocotrienol	ND-39
Gamma-tocotrienol	ND
Delta-tocotrienol	ND
Total (mg/kg)	900-2000

ND – Non-detectable.

APPENDIX IX

PROPOSED DRAFT REVISION TO THE *STANDARD FOR OLIVE OILS AND OLIVE POMACE OILS* (CXS 33-1981)

(Adoption at Step 5/8)

1. SCOPE

This standard applies to olive oils and olive-pomace oils described in Section 2 presented in a state for human consumption.

2. DESCRIPTION

Olive oil is the oil obtained solely from the fruit of the olive tree (*Olea europaea* L.) to the exclusion of oils obtained using solvents or re-esterification processes and of any mixture with oils of other kinds.

Virgin *olive oils* are the oils obtained from the fruit of the olive tree solely by mechanical or other physical means under conditions, particularly thermal conditions, that do not lead to alterations in the oil, and which have not undergone any treatment other than washing, decanting, centrifuging, and filtration.

Olive-pomace oil is the oil obtained by treating olive pomace with solvents other than halogenated solvents or by other physical treatments, to the exclusion of oils obtained by re-esterification processes and of any mixture with oils of other kinds.

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 Designations and definitions

Extra virgin olive oil*:* virgin olive oil with a free acidity, expressed as oleic acid, of not more than 0.8 grams per 100 grams and whose other physicochemical and organoleptic characteristics correspond to those laid down for this category.

Virgin olive oil*:* virgin olive oil with a free acidity, expressed as oleic acid, of not more than 2.0 grams per 100 grams and whose other physicochemical and organoleptic characteristics correspond to those laid down for this category.

Ordinary virgin olive oil: virgin olive oil with a free acidity, expressed as oleic acid, of not more than 3.3 grams per 100 grams and whose other characteristics correspond to those laid down for this category[1].

Refined olive oil: olive oil obtained from virgin olive oils by refining methods (including methods aiming to the complete or partial removal of chemical compounds responsible for organoleptic descriptors) that do not lead to alterations in the initial glyceridic structure. It has a free acidity, expressed as oleic acid, of not more than 0.3 grams per 100 grams and its other physicochemical characteristics correspond to those laid down for this category[1].

Olive oil composed of refined olive oil and virgin olive oils: olive oil consisting of a blend of refined olive oil and extra virgin olive oil and/or virgin olive oil. It has a free acidity, expressed as oleic acid, of not more than 1 gram per 100 grams and its other physicochemical characteristics correspond to those laid down for this category.

Refined *olive-pomace oil**:* Olive-pomace oil obtained from crude olive-pomace oil by refining methods that do not lead to alterations in the initial glyceridic structure. It has a free acidity, expressed as oleic acid, of not more than 0.3 grams per 100 grams and its other physicochemical characteristics correspond to those laid down for this category[1].

Olive-pomace oil composed of refined olive-pomace oil and virgin olive oils: olive-pomace oil consisting of a blend of refined olive-pomace oil and extra virgin olive oil and/or virgin olive oil. It has a free acidity, expressed as oleic acid, of not more than 1 gram per 100 grams and its other physicochemical characteristics correspond to those laid down for this category. In no case shall this blend be called olive oil.

Note: Genuine virgin olive oil that does not meet one or more of the virgin olive oil's quality criteria of this standard is referred to as LAMPANTE OLIVE OIL. It is considered unfit for human consumption either as it stands or blended with other oils.

[1] This product may only be sold direct to the consumer if permitted in the country of retail sale (RETAINED UNTIL CCFO30 FOR ORDINARY OLIVE OIL).

3.2 COMPOSITION FACTORS

3.2.1 GLC ranges of fatty acid composition (expressed as percentages of total fatty acids)

The fatty acid values in this table apply to the oils described in Section 3.1 presented in a state for human consumption. However, to provide clarity in the trade of lampante olive oil and crude olive-pomace oil, the values of the table, trans isomers excluded, may also be applied.

Fatty acid	Extra virgin olive oil Virgin olive oils	Olive oil composed of refined olive oil and virgin olive oils Refined olive oil	Olive-pomace oil composed of refined olive-pomace oil and virgin olive oils Refined olive-pomace oil
C14:0	⩽ 0.03	⩽ 0.03	⩽ 0.03
C16:0	7.0— 20.0	7.0 – 20.0	7.0 – 20.0
C16:1	0.3 – 3.5	0.3 – 3.5	0.3 – 3.5
C17:0	⩽ 0.4	⩽ 0.4	⩽ 0.4
C17:1	⩽ 0.6	⩽ 0.6	⩽ 0.6
C18:0	0.5 -5.0	0.5 - 5.0	0.5 – 5.0
C18:1	53.0 – 85.0	53.0 – 85.0	53.0 – 85.0
C18:2	2.5– 21.0	2.5 – 21.0	2.5 – 21.0
C18:3	⩽ 1.0[a]	⩽ 1.0[a]	⩽ 1.0[a]
C20:0	≤ 0.6	≤ 0.6	≤ 0.6
C20:1	⩽ 0.5	⩽ 0.5	⩽ 0.5
C22:0	≤ 0.2	≤ 0.2	≤ 0.3
C24:0	≤ 0.2	≤ 0.2	≤ 0.2
Trans fatty acids			
Σ(t-C18:1)	≤ 0.05	≤ 0.20	≤ 0.40
Σ(t-C18:2) + Σ(t-C18:3)	≤ 0.05	≤ 0.30	≤ 0.35
(a) In cases where an edible virgin olive oil exhibits 1.0 < linolenic acid % ⩽ 1.4, then this oil is authentic provided that apparent β-sitosterol/campesterol ⩾ 24 and all other composition factors lie within the official limits.			

3.2.2 ΔECN42 (Difference between the actual and theoretical ECN 42 triglyceride content)

Extra virgin olive oil Virgin olive oils	≤ |0.20|
Refined olive oil Olive oil composed of refined olive oil and virgin olive oils	≤ |0.30|
Refined olive-pomace oil Olive-pomace oil composed of refined olive-pomace oil and virgin olive oils	≤ |0.50|

3.2.3 4α-Desmethylsterols composition (% total 4α-desmethylsterols)

Cholesterol	≤ 0.5
Brassicasterol	⩽ 0.1 for olive oils ≤ 0.2 for olive-pomace oils
Campesterol	≤ 4.0[b]
Stigmasterol	< campesterol
Δ7-stigmastenol	≤ 0.5[c]
Apparent β-sitosterol[d]	≥ 93.0

(b) When a virgin or extra virgin olive oil naturally has a campesterol level > 4.0% and ≤ 4.8%, it may be considered authentic if the stigmasterol level is ≤ 1.4% and the delta-7-stigmastenol level is ≤ 0.3%. The other parameters shall meet the limits set out in the standard.

(c) For virgin olive oils, if the value is > 0.5 and ≤ 0.8%, campesterol must be ≤ 3.3, apparent β-sitosterol/(campesterol+Δ7-stigmastenol) ≥ 25, stigmasterol ≤ 1.4 and ΔECN42 ≤ |0.1|. For refined olive pomace oils values > 0.5 and ≤ 0.7% then stigmasterol ≤ 1.4% and ΔECN42 ≤ |0.4|.

(d) Chromatographic peak composed by Δ5,23-stigmastadienol+clerosterol+β-sitosterol+sitostanol+Δ5-avenasterol+Δ5,24-stigmastadienol peaks.

3.2.4 Total 4α-desmethylsterols content (mg/kg)

Virgin olive oils Refined olive oil Olive oil composed of refined olive oil and virgin olive oils	≥ 1,000
Refined olive-pomace oil	≥ 1,800
Olive-pomace oil composed of refined olive-pomace oil and virgin olive oils	≥ 1,600

3.2.5 Erythrodiol and uvaol (% total 4α-desmethylsterols + erythrodiol and uvaol)

Extra virgin olive oil Virgin olive oils Olive oil composed of refined olive oil and virgin olive oils Refined olive oil	≤ 4.5
Olive-pomace oil composed of refined olive oil and virgin olive oils Refined olive-pomace oil	> 4.5

3.2.6 Waxes content (mg/kg)

Extra virgin olive oil Virgin olive oils	≤ 150[e]
Refined olive oil Olive oil composed of refined olive oil and virgin olive oils	≤ 350[f]
Refined olive-pomace oil Olive-pomace oil composed of refined olive-pomace oil and virgin olive oils	> 350[f]

(e) Sum of C_{42} esters+C_{44} esters+C_{46} ester

(f) Sum of C_{40} esters+C_{42} esters+C_{44} esters+C_{46} ester

3.2.7 Stigmastadienes content (mg/kg)

Extra virgin olive oil Virgin olive oils	≤ 0.05

3.2.8 Percentage of 2-glyceryl monopalmitate (2P) (% total monoacylglycerol)

Extra virgin olive oil Virgin olive oil Olive oil composed of refined olive oil and virgin olive oils	If C16:0 ≤ 14.0 %; 2P ≤ 0.9 % If C16:0 > 14.0 %, 2P ≤ 1.0 %
Refined olive oil	If C16:0 ≤ 14.0 %; 2P ≤ 0.9 % If C16:0 > 14.0 %, 2P ≤ 1.1 %
Refined olive-pomace oil	2P ≤ 1.4 %
Olive-pomace oil composed of refined olive pomace oil and virgin olive oils	2P ≤ 1.2 %

3.2.9 ΔK [g, h]

Extra virgin olive oil Virgin olive oil Ordinary virgin olive oil[j]	≤ 0.01

(g) Defined as:

$$\Delta K_{270} = K_{270} - \frac{K_{266} + K_{274}}{2}$$

$$\Delta K_{268} = K_{268} - \frac{K_{264} + K_{272}}{2}$$

(h): 270 nm when using cyclohexane; 268 nm when using iso-octane.

3.3 QUALITY FACTORS

3.3.1 Organoleptic characteristics of virgin olive oils

	Median of the most perceived defect	Median of the fruity attribute
Extra virgin olive oil	0.0	> 0.0
Virgin olive oil	≤ 2.5[i]	> 0.0
Ordinary virgin olive oil[j]	2.5 < Me ≤ 6.0[k]	

(i) Does not include the uncertainty of the measure calculated by IOC method.

(j) Retained until CCFO30

(k) or when the median of the defect is less than or equal to 2.5 and the median of the fruity attribute is equal to 0.

3.3.2 Free fatty acids (g/100 g, expressed as oleic acid)

Extra virgin olive oil	≤ 0.8
Virgin olive oils	≤ 2.0
Refined olive oil	≤ 0.3
Olive oil composed of refined olive oil and virgin olive oils	≤ 1.0
Refined olive-pomace oil	≤ 0.3
Olive-pomace oil composed of refined olive-pomace oil and virgin olive oils	≤ 1.0

3.3.3 Peroxide value (milliequivalents of active oxygen/kg oil)

Extra virgin olive oil	≤ 20
Virgin olive oils	≤ 20
Refined olive oil	≤ 5
Olive oil composed of refined olive oil and virgin olive oils	≤ 15
Refined olive-pomace oil	≤ 5
Olive-pomace oil composed of refined olive-pomace oil and virgin olive oils	≤ 15

3.3.4 Absorbancy in the ultraviolet region (K270) at 270/or 268 nm[(l)] (expressed as K_{270}/or K_{268})

Extra virgin olive oil	≤ 0.22
Virgin olive oil	≤ 0.25
Ordinary virgin olive oil[j]	≤ 0.30 (*)
Refined olive oil	≤ 1.25
Olive oil composed of refined olive oil and virgin olive oils	≤ 1.15
Refined olive-pomace oil	≤ 2.00
Olive-pomace oil composed of refined olive-pomace oil and virgin olive oils	≤ 1.70

(l): 270 nm when using cyclohexane; 268 nm when using iso-octane.

* After passage of the sample through activated alumina, absorbency at 270 nm shall be equal to or less than 0.11.

(j) Retained until CCFO30

3.3.5 ΔK [(g, h)]

Refined olive oil	≤ 0.16
Olive oil composed of refined olive oil and virgin olive oils	≤ 0.15
Refined olive-pomace oil	≤ 0.20
Olive-pomace oil composed of refined olive-pomace oil and virgin olive oils	≤ 0.18

(g) Defined as

$$\Delta K_{270} = K_{270} - \frac{K_{266} + K_{274}}{2}$$

$$\Delta K_{268} = K_{268} - \frac{K_{264} + K_{272}}{2}$$

(h): 270 nm when using cyclohexane; 268 nm when using iso-octane.

3.3.6 Fatty acid ethyl esters (mg/kg)

Extra virgin olive oil	≤ 35

4. FOOD ADDITIVES

Antioxidants used in accordance with Tables 1 and 2 of the *General Standard for Food Additives* (CXS 192-1995) in food category 02.1.2 (Vegetable oils and fats) are acceptable for use in foods conforming to this Standard.

No additives are permitted in virgin olive oils covered by this Standard.

5. CONTAMINANTS

5.1 The products covered by this Standard shall comply with the Maximum Levels of the *General Standard for Contaminants and Toxins in Food and Feed* (CXS 193-1995).

5.2 Pesticide residues

The products covered by the provisions of this standard shall comply with those maximum residue limits established by the Codex Alimentarius Commission for these commodities.

5.3 Halogenated solvents

Maximum content of each halogenated solvent: 0.1 mg/kg

Maximum content of the sum of all halogenated solvents: 0.2 mg/kg

6. HYGIENE

It is recommended that the products covered by the provisions of this Standard be prepared and handled in accordance with the appropriate sections of the *General Principles of Food Hygiene* (CXC 1-1969), and other relevant Codex texts such as Codes of Hygienic Practice and Codes of Practice.

The products should comply with any microbiological criteria established in accordance with the *Principles and Guidelines for the Establishment and Application of Microbiological Criteria Related to Foods* (CXG 21-1997).

7. LABELLING

The products shall be labelled in accordance with the *General Standard for the Labelling of Pre-packaged Foods* (CXS 1–1985).

7.1 Name of the food

The name of the product shall be consistent with the descriptions as shown in Section 3 of this standard. In no case shall the designation 'olive oil' be used to refer to olive-pomace oils.

7.2 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).

8. METHODS OF ANALYSIS AND SAMPLING[2]

Fats and oils and related products	Provision	Method(s)	Principle	Type
Olive oils and olive pomace oils	Absorbency in ultra-violet	COI/T.20/Doc. No. 19 / ISO 3656 / AOCS Ch 5-91	Absorption in ultra-violet	I
Olive oils and olive pomace oils	Acidity, free (acid value)	ISO 660 / AOCS Cd 3d-63 / COI/T.20/Doc. No 34	Titrimetry	I
Olive oils and olive pomace oils	Alpha-tocopherol	ISO 9936	HPLC (UV or fluorescence)	II
		AOCS Ce 8-89		III
Olive oils and olive pomace oils	Difference between the actual and theoretical ECN 42 triglyceride content	COI/T.20/Doc. no. 20 and COI/T.20/Doc. No 33	Analysis of triglycerides by HPLC and fatty acids by GC followed by calculation	I
Olive oils and olive pomace oils	1,2 Diglycerides	COI/T.20/Doc. No 32[3]	Gas chromatography (FID)	II
		ISO 29822[3]		III

[2] The methods of analysis will be included in CXS 234-1999 after endorsement by CCMAS and the following text shall replace the table.

For checking the compliance with this standard, the methods of analysis and sampling contained in the *Recommended Methods of Analysis and Sampling* (CXS 234-1999) relevant to the provisions in this standard, shall be used.

[3] This method is retained pending review in CCFO29 and CCFO30.

Fats and oils and related products	Provision	Method(s)	Principle	Type
Olive oils and olive pomace oils	Erythrodiol + uvaol	COI/T.20/Doc. No 26	Separation and gas chromatography (FID)	II
Olive oils and olive pomace oils	Fatty acid composition	COI/T.20/Doc. No 33	Gas chromatography (FID) of methyl esters	II
		AOCS Ce 2-66 and AOCS Ch 2-91 / Ce 1h-05		III
		ISO 12966-2 and ISO 12966-4		III
Olive oils and olive pomace oils	2-glyceryl monopalmitate percentage	COI/T.20/Doc. No 23	Gas chromatography (FID)	II
Olive oils and olive pomace oils	Fatty acid ethyl ester content	COI/T.20/Doc. No 28	Gas chromatography (FID)	II
Olive oils and olive pomace oils	Halogenated solvents, traces	ISO 16035	Gas chromatography (FID)	II
Olive oils and olive pomace oils	Insoluble impurities in light petroleum	ISO 663	Gravimetry	I
Olive oils and olive pomace oils	Iodine value	ISO 3961 / AOAC 9930.20 / AOCS Cd 1d-92 / NMKL 39	Wijs-Titrimetry	I
Olive oils and olive pomace oils	Iron and copper	ISO 8294 / AOAC 990.05	AAS	II
Olive oils and olive pomace oils	Lead	Use performance criteria*		
Olive oils and olive pomace oils	Moisture and volatile matter	ISO 662	Gravimetry	I
Olive oils and olive pomace oils	Organoleptic characteristics	COI/T.20/Doc. no. 15	Panel test	I
Olive oils and olive pomace oils	Peroxide value	ISO 3960 / AOCS Cd 8b-90	Titrimetry	I
		COI/T.20/Doc. No 35		IV
Olive oils and olive pomace oils	Pyropheophytin “a”	ISO 29841[3]	HPLC with UV/VIS or fluorescence detection	II
Olive oils and olive pomace oils	Relative density	ISO 6883 / AOCS Cc 10c-95	Pycnometry	I
Olive oils and olive pomace oils	Refractive index	ISO 6320 / AOCS Cc 7-25	Refractometry	II
Olive oils and olive pomace oils	Saponification value	ISO 3657 / AOCS Cd 3-25	Titrimetry	I

* ISO 12193; AOAC 994.02; and AOCS Ca 18c-91

Fats and oils and related products	Provision	Method(s)	Principle	Type
Olive oils and olive pomace oils	4α-desmethylsterol and total sterol content	COI/T.20/Doc. No 26	Gas chromatography (FID)	II
Olive oils and olive pomace oils	Stigmastadienes	COI/T.20/Doc. no. 11	Gas chromatography (FID)	II
		ISO 15788-1		III
		AOCS Cd 26-96		III
		ISO 15788-2	HPLC	III
Olive oils and olive pomace oils	*trans* Fatty acids content	COI/T.20/Doc no. 33	Gas chromatography (FID) of methyl esters	II
		ISO 12966-2 and ISO 12966-4		III
		AOCS Ce 2-66 and AOCS Ce 1h-05		III
Olive oils and olive pomace oils	Unsaponifiable matter	ISO 3596 / AOCS Ca 6b-53	Gravimetry	I
Olive oils and olive pomace oils	Wax content	COI/T.20/Doc. no. 28	Gas chromatography (FID)	II
		AOCS Ch 8-02		III
Olive oils and olive pomace oils	Sampling	ISO 5555 and ISO 661		

Appendix I

OTHER QUALITY AND COMPOSITION FACTORS

These quality and composition factors are supplementary information to the essential composition and quality factors of the standard. A product which meets the essential quality and composition factors but does not meet these supplementary factors, may still conform to the standard.

1. QUALITY CHARACTERISTICS

1.1 Organoleptic characteristics

Extra virgin and virgin olive oils: See Section 3.3.1			
Type of oil	Perceptions		
	Odour	Taste	Colour
Refined olive oil	Acceptable		light yellow
Olive oil composed of refined olive oil and virgin olive oils	Good		light yellow to green
Refined olive-pomace oil	Acceptable		light yellow to brownish-yellow
Olive-pomace oil composed of refined olive-pomace oil and virgin olive oils	Good		light yellow to green

1.2 Moisture and volatile matter (g/100 g)

Extra virgin olive oil Virgin olive oils	**≤** 0.2
Refined olive oil	**≤** 0.1
Olive oil composed of refined olive oil and virgin olive oils	**≤** 0.1
Refined olive-pomace oil	**≤** 0.1
Olive-pomace oil composed of refined olive-pomace oil and virgin olive oils	**≤** 0.1

1.3 Insoluble impurities in light petroleum (g/100 g)

Extra virgin olive oil Virgin olive oils	**≤** 0.1
Refined olive oil Olive oil composed of refined olive oil and virgin olive oils Refined olive-pomace oil Olive-pomace oil composed of refined olive-pomace oil and virgin olive oils	≤ 0.05

1.4 Absorbance in the ultraviolet region at 232 nm (expressed as K_{232})

Extra virgin olive oil	≤ 2.50*
Virgin olive oils	≤ 2.60[4]

[4] The country of retail sale may require compliance with these limits when the oil is made available to the end consumer.

1.5 Trace metals (mg/kg)

All olive oils and olive-pomace oils	
Iron (Fe)	≤ 3.0
Copper (Cu)	≤ 0.1

2. CHEMICAL AND PHYSICAL CHARACTERISTICS

2.1 Relative density (d_r^{20}) (20 ºC/water at 20 ºC)

Extra virgin olive oil Virgin olive oils Refined olive oil Olive oil composed of refined olive oil and virgin olive oils Refined olive-pomace oil Olive-pomace oil composed of refined olive-pomace oil and virgin olive oils	0.910-0.916

2.2 Refractive index (n_D^{20})

Extra virgin olive oil Virgin olive oils Refined olive oil Olive oil composed of refined olive oil and virgin olive oils	1.4677-1.4705
Refined olive-pomace oil Olive-pomace oil composed of refined olive-pomace oil and virgin olive oils	1.4680-1.4707

2.3 Saponification value (mg KOH/g)

Extra virgin olive oil Virgin olive oils Refined olive oil Olive oil composed of refined olive oil and virgin olive oils	184-196
Refined olive-pomace oil Olive-pomace oil composed of refined olive-pomace oil and virgin olive oils	182-193

2.4 Iodine value (Wijs method)

Extra virgin olive oil Virgin olive oils Refined olive oil Olive oil composed of refined olive oil and virgin olive oils	75-94
Refined olive-pomace oil Olive-pomace oil composed of refined olive-pomace oil and virgin olive oils	75-92

2.5 Unsaponifiable matter (g/kg)

Extra virgin olive oil Virgin olive oils Refined olive oil Olive oil composed of refined olive oil and virgin olive oils	**≤** 15
Refined olive-pomace oil Olive-pomace oil composed of refined olive-pomace oil and virgin olive oils	**≤** 30

3. METHODS OF ANALYSIS AND SAMPLING[2]

Fats and oils and related products	Provision	Method(s)	Principle	Type
Olive oils and olive pomace oils	Absorbency in ultra-violet	COI/T.20/Doc. No. 19 / ISO 3656 / AOCS Ch 5-91	Absorption in ultra-violet	I
Olive oils and olive pomace oils	Acidity, free (acid value)	ISO 660 / AOCS Cd 3d-63 / COI/T.20/Doc. No 34	Titrimetry	I
Olive oils and olive pomace oils	Alpha-tocopherol	ISO 9936	HPLC (UV or fluorescence)	II
		AOCS Ce 8-89		III
Olive oils and olive pomace oils	Difference between the actual and theoretical ECN 42 triglyceride content	COI/T.20/Doc. no. 20 and COI/T.20/Doc. No 33	Analysis of triglycerides by HPLC and fatty acids by GC followed by calculation	I
Olive oils and olive pomace oils	1,2 Diglycerides	COI /T.20/Doc.No 32[3]	Gas chromatography (FID)	II
		ISO 29822[3]		III
Olive oils and olive pomace oils	Erythrodiol + uvaol	COI/T.20/Doc. No 26	Separation and gas chromatography (FID)	II
Olive oils and olive pomace oils	Fatty acid composition	COI/T.20/Doc. No 33	Gas chromatography (FID) of methyl esters	II
		AOCS Ce 2-66 and AOCS Ch 2-91 / Ce 1h-05		III
		ISO 12966-2 and ISO 12966-4		III
Olive oils and olive pomace oils	2-glyceryl monopalmitate percentage	COI/T.20/Doc. No 23	Gas chromatography (FID)	II
Olive oils and olive pomace oils	Fatty acid ethyl ester content	COI/T.20/Doc. No 28	Gas chromatography (FID)	II
Olive oils and olive pomace oils	Halogenated solvents, traces	ISO 16035	Gas chromatography (FID)	II
Olive oils and olive pomace oils	Insoluble impurities in light petroleum	ISO 663	Gravimetry	I
Olive oils and olive pomace oils	Iodine value	ISO 3961 / AOAC 9930.20 / AOCS Cd 1d-92 / NMKL 39	Wijs-Titrimetry	I
Olive oils and olive pomace oils	Iron and copper	ISO 8294 / AOAC 990.05	AAS	II

[2] The methods of analysis will be included in CXS 234-1999 after endorsement by CCMAS and the following text shall replace the table.
For checking the compliance with this standard, the methods of analysis and sampling contained in the *Recommended Methods of Analysis and Sampling* (CXS 234-1999) relevant to the provisions in this standard, shall be used.

[3] This method is retained pending review in CCFO29 and CCFO30.

Fats and oils and related products	Provision	Method(s)	Principle	Type
Olive oils and olive pomace oils	Lead	Use performance criteria*		
Olive oils and olive pomace oils	Moisture and volatile matter	ISO 662	Gravimetry	I
Olive oils and olive pomace oils	Organoleptic characteristics	COI/T.20/Doc. no. 15	Panel test	I
Olive oils and olive pomace oils	Peroxide value	ISO 3960 / AOCS Cd 8b-90	Titrimetry	I
		COI/T.20/Doc. No 35		IV
Olive oils and olive pomace oils	Pyropheophytin “a”	ISO 29841[3]	HPLC with UV/VIS or fluorescence detection	II
Olive oils and olive pomace oils	Relative density	ISO 6883 / AOCS Cc 10c-95	Pycnometry	I
Olive oils and olive pomace oils	Refractive index	ISO 6320 / AOCS Cc 7-25	Refractometry	II
Olive oils and olive pomace oils	Saponification value	ISO 3657 / AOCS Cd 3-25	Titrimetry	I
Olive oils and olive pomace oils	4α-desmethylsterol and total sterol content	COI/T.20/Doc. No 26	Gas chromatography (FID)	II
Olive oils and olive pomace oils	Stigmastadienes	COI/T.20/Doc. no. 11	Gas chromatography (FID)	II
		ISO 15788-1		III
		AOCS Cd 26-96		III
		ISO 15788-2	HPLC	III
Olive oils and olive pomace oils	*trans* Fatty acids content	COI/T.20/Doc no. 33	Gas chromatography (FID) of methyl esters	II
		ISO 12966-2 and ISO 12966-4		III
		AOCS Ce 2-66 and AOCS Ce 1h-05		III
Olive oils and olive pomace oils	Unsaponifiable matter	ISO 3596 / AOCS Ca 6b-53	Gravimetry	I
Olive oils and olive pomace oils	Wax content	COI/T.20/Doc. no. 28	Gas chromatography (FID)	II
		AOCS Ch 8-02		III
Olive oils and olive pomace oils	Sampling	ISO 5555 and ISO 661		

* ISO 12193; AOAC 994.02; and AOCS Ca 18c-91

[3] This method is retained pending review in CCFO29 and CCFO30.

APPENDIX X

PROPOSED DRAFT AMENDMENT/REVISION OF THE *STANDARD FOR FISH OILS* (CXS 329-2017): INCLUSION OF CALANUS OIL

(For Adoption at Step 5/8)

2. DESCRIPTION

2.1.6 *Calanus oil* is derived from the species *Calanus finmarchicus.* Calanus oil consists mainly of wax esters.

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 Gas-liquid chromatography (GLC) ranges of fatty acid composition (expressed as percentages)

Table 1: Fatty acid (FA) composition of named fish oil and fish liver categories as determined by gas liquid chromatography from authentic samples (expressed as percentage of total fatty acids) (see Section 3.1 of the standard)

Fatty acids	**Calanus oil (Section 2.1.6)**
C14:0 Myristic acid	12.7-17.1
C15:0 Pentadecanoic acid	0.1-0.9
C16:0 Palmitic acid	7.9-12.9
C16:1 (n-7) Palmitoleic acid	3.2-8.1
C17:0 Heptadecanoic acid	0.3-1.2
C18:0 Stearic acid	0.4-1.5
C18:1 (n-7) Vaccenic acid	0.3-0.8
C18:1 (n-9) Oleic acid	2.3-4.2
C18:2 (n-6) Linoleic acid	0.7-1.5
C18:3 (n-3) Linolenic acid	1.1-3.5
C18:3 (n-6) γ-Linolenic acid	ND-0.9
C18:4 (n-3) Stearidonic acid	8.7-19.9
C20:0 Arachidic acid	0.1-1.2
C20:1 (n-9) Eicosenoic acid	2.1-5.6
C20:1 (n:11) Eicosenoic acid	0.2-0.8
C20:4 (n-6) Arachidonic acid	ND-0.7
C20:4 (n-3) Eicosatetraenoic acid	0.9-2.0
C20:5 (n-3) Eicosapentaenoic acid	10.8-16.8
C21:5 (n-3) Heneicosapentaenoic acid	0.5-0.7
C22:1 (n-9) Erucic acid	ND-0.8
C22:1(n-11) Cetoleic acid	3.1-8.3
C22:5 (n-3) Docosapentaenoic acid	0.5-0.8
C22:6 (n-3) Docosahexaenoic acid	7.2-12.3

ND = non-detected, defined as ≤0.05%

NA = not applicable or available

3.2 Other essential compositional criteria

For calanus oil (Section 2.1.6) the content of wax esters shall be at least 80 w/w %.

3.3.2 *Fish oils with a high phospholipid concentration of 30% or more such as krill oil (Section 2.1.3) and fish oils with a high wax ester concentration of 80% or more such as calanus oil (Section 2.1.6) shall comply with the following*:

Acid value	≤ 45 mg KOH/g
Peroxide value	≤ 5 milliequivalent of active oxygen/kg oil

3.5 Other compounds

Maximum levels of astaxanthin in calanus oil (Section 2.1.6) shall comply with regulations of the country of retail sale.

7.3 Other labelling requirements

For calanus oil (Section 2.1.6), the maximum intake level of astaxanthin shall be declared if required by the country of retail sale in accordance with the acceptable daily intake established for different age groups by competent authorities.

8. METHODS OF ANALYSIS AND SAMPLING

Commodity	Provision	Method	Principle	Type
Fish oil	Wax content	AOCS Ch 8-02	Gas Chromatography	IV

APPENDIX XI

PROJECT DOCUMENT

PROPOSED REVISIONS TO CODEX STANDARDS ON FATS AND OILS TO REDUCE TRANS-FATTY ACID INTAKE

(For Approval)

1. PURPOSE AND SCOPE OF THE NEW WORK

The objective of this proposal is to revise the following Codex Standards on fats and oils to include a prohibition on partially hydrogenated oils (PHO) and/or limits on industrially produced trans-fatty acid (iTFA):

- *Standard for Edible Fats and Oils Not Covered by Individual Standards* (CXS 19-1981)
- *Standard for Fat Spreads and Blended Spreads* (CXS 256-1999)
- *Standard for Named Animal Fats* (CXS 211-1999)

2. ITS RELEVANCE AND TIMELINESS

Virtual elimination of industrially produced trans-fatty acids (iTFA) from the food supply was one of the priority targets identified in the 13th General Programme of Work of the World Health Organization (WHO) for 2019-2023. Increased intake of TFA (>1% of total energy intake) is associated with increased risk of coronary heart disease events and mortality. Globally, more than 500,000 deaths in 2010 were attributed to increased intake of TFA.

Codex has committed to revising Codex standards and related texts, as necessary, to ensure that they are consistent with and reflect current scientific knowledge and other relevant information.

Of the six Codex standards for fats and oils, two have limits on TFA levels: *Standard for olive oils and olive pomace oils* (CXS 33-1981) and *Standard for fish oils* (CXS 329-2017). The four other standards – *Standard* for *Named Vegetable Oils* (CXS 210-1999), *Standard for Named Animal Fats* (CXS 211-1999), *Standard for Edible Fats and Oils Not Covered by Individual Standards* (CXS 19-1981), *and Standard for Fat Spreads and Blended Spreads* (CXS 256-1999) – do not identify specific fatty acid isomers in their compositional requirements nor do they identify limits for TFA levels.

3. MAIN ASPECTS TO BE COVERED

Revise the following standards to:

a) include a prohibition on PHO and/or limits on industrially produced TFA:

- *Standard for Fat Spreads and Blended Spreads* (CXS 256-1999)
- *Standard for Edible Fats and Oils Not Covered by Individual Standards* (CXS 19-1981)
- *Standard for Named Animal Fats* (CXS 211-1999)

b) ensure that the scope of the above prohibition and/or limits, apply to fats and oil products used as ingredients in other food products, and consideration of enforcement option to focus on ingredient permission rather than in the consumer products given analytical challenges in differentiating between iTFA and ruminant TFA

c) introduce as necessary any definitions in the standards, such as a definition for Partially Hydrogenated Oils (PHOs)

d) provide flexibility to facilitate different approaches to implementation of the standards

The proposed list of standards does not include the *Standard for Named Vegetable Oils* (CXS 210-1999) where pure oils are described. Partial hydrogenation of such oils would move them outside the scope of the standard.

4. ASSESSMENT AGAINST THE CRITERIA FOR THE ESTABLISHMENT OF NEW WORK PRIORITIES

General criteria:

Clear composition requirements for oils and fats related to TFA can provide:

- industry with a clear and consistent direction for product formulation; and
- consumers with healthier products to reduce their risk of coronary heart disease.

Criteria applicable to general subjects:

(a) *Diversification of national legislation and apparent resulting or potential impediments to international trade*

Greater global harmonization related to the TFA content of fat products would help reduce barriers to trade and minimize potential negative health impacts.

(b) *Scope and establishment of priorities between the various sections of the work*

Not applicable.

(c) *Work that has already been undertaken by other international organizations in this field and/or suggested by the relevant international intergovernmental body(ies).*

In May 2018, WHO called for the global elimination of industrially produced TFA by 2023, highlighting as a priority target of the WHO's 13th General Programme of Work. The WHO REPLACE action framework was launched in 2018 and includes technical guidance and practical steps to help governments take relevant actions to eliminate industrially produced TFA from their national food supply. WHO also monitors countries' progress in implementing legislative and other measures to reduce and eliminate industrially produced TFA and has developed the TFA Country Score Card to track countries' performance on a continuous basis.

(d) *Amenability of the subject of the proposal to standardization*

Greater harmonization related to the TFA content of products would minimize potential negative health impacts and help reduce barriers to trade.

(e) *Consideration of the global magnitude of the problem*

Despite substantial progress, however, this leaves 5 billion people worldwide at risk from TFA's harmful health impacts. The report showed that the overwhelming majority of people living in low-income countries are not protected by such policies.

5. RELEVANCE TO THE CODEX STRATEGIC PLAN'S[1] GOALS AND OBJECTIVES

The proposed work is consistent with the Commission's mandate to develop standards, guidelines and other international recommendations to protect consumer health and to ensure fair food trade practices. Amending the named fats and oils standards to comprehensively address TFA will contribute to the achievement of Strategic Goals 1, 2, 3, and 4.

- **Goal 1: Address current, emerging and critical issues in a timely manner.**

Virtual elimination of industrially produced TFA from the food supply is one of the priority targets identified in the 13th General Programme of Work of the WHO in 2019-2023.

- **Goal 2: Develop standards based on science and Codex risk-analysis principles.**
  - Objective 2.1. Use scientific advice consistently, in line with Codex risk-analysis principles.

Implementing legislative or regulatory actions to limit or prohibit industrially produced TFA has been recognized as the most effective action to reduce TFA in the food supply.

- **Goal 3: Increase impact through the recognition and use of Codex standards.**
  - Objective 3.2: Support initiatives to enable the understanding and implementation/application of Codex standards.

This work would enable better application of globally-aligned and scientifically-based TFA compositional requirements globally.

- **Goal 4: Facilitate the participation of all Codex Members through the standard setting process.**
  - Objective 4.3: Reduce barriers to active participation by developing Countries.
    - Trans fat is a globally relevant issue, impacting both developed and developing countries.
    - Amending the CCFO standards to address the issue of TFA would enable all Codex Members and Observers to participate in the discussion.

[1] For more information, please see the Codex Strategic Plan 2021-2025

6. RELATIONSHIP BETWEEN THIS PROPOSAL AND OTHER EXISTING CODEX DOCUMENTS

The proposal relates to the *Guidelines on Nutrition Labelling* (CXG 2-1985) which includes information on TFA declaration and the *General Standard for the Labelling of Prepackaged Foods* (CXS 1-1985) which refers to the term “hydrogenated” and “partially-hydrogenated” in item 4.2.3.1.

7. IDENTIFICATION OF ANY REQUIREMENT FOR AND AVAILABILITY OF EXPERT SCIENTIFIC ADVICE

No need for the expert scientific advice has been identified at this stage.

8. IDENTIFICATION OF ANY NEED FOR TECHNICAL INPUT TO THE GUIDELINE FROM EXTERNAL BODIES THAT CAN BE PLANNED

No need identified at this stage as the committee could consider using the values already established by the WHO.

9. PROPOSED TIMELINE FOR COMPLETION OF THE NEW WORK

Subject to approval of the new work by the Codex Alimentarius Commission, it is expected that the CCFO will require 2 sessions to complete its work.

APPENDIX XII

PROJECT DOCUMENT

PROPOSAL FOR NEW WORK ON A STANDARD FOR MICROBIAL OMEGA-3 OILS

(Approval)

1. The purposes and the scope of the standard

The purpose and scope of this new work is to establish an overarching Standard providing a harmonised description containing quality and compositional factors for microbial omega-3 oils, potential food safety issues of the product and its production system for use as an ingredient in foods and food supplements where these are regulated as food.

2. Its relevance and timeliness

Microbial omega-3 oils have specific compositions, rich in eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), which makes them an important ingredient in an increasing variety of foods and food supplements.

The consumption of oils produced by microbial omega-3 organisms, known for their specific compositions rich in EPA and DHA, is a more recent phenomenon observed in many countries. Microbial omega-3 oils are added to foodstuffs, and consumer awareness, as well as trade, is increasing.

Today, microbial omega-3 oils are presented to the consumer in fortified foods, foods for plant-based diets, several types of foods for special dietary uses — such as foods for special medical purposes, infant formula or follow-up formula products — and food supplements.

However, there is a lack of knowledge among consumers and national authorities on appropriate quality and compositional factors for microbial omega-3 oils in general, or between different types of microbial omega-3 oils. As trade in microbial omega-3 oils has increased rapidly, with volume at over 5,029 metric tons (according to data for the year 2021), an international standard is required to enable fair practices in trade.

Examples of internationally traded microbial omega-3 oils currently on the market include those from the genera Schizochytrium, Nannochloropsis and Crypthecodinium, among others:

- Oil from Schizochytrium is composed of triglycerides rich in DHA, or rich in DHA and EPA, as the major polyunsaturated fatty acid components.[1] It has a light yellow to orange appearance. It is obtained from fermentation of *Schizochytrium* sp., followed by solvent extraction, aqueous extraction methods or enzymatic hydrolysis methods, and further refining using traditional technologies applied for vegetable or animal based fats and oils.
- Oil from Nannochloropsis has a dark green appearance and is obtained from the fermentation of *Nannochloropsis 56culate*, followed by extraction methods and is composed of a mixture of glycolipids, phospholipids and triglycerides, with >24% of fatty acids being EPA.[2]
- Oil from *Crypthecodinium cohnii* is composed of triglycerides with a high level of DHA by weight, with DHA constituting almost all the polyunsaturated fatty acid fraction. The color of the oil is light yellow to orange. The oil is obtained by fermentation of *C. cohnii*, and may be refined using winterization, bleaching, and deodorization.

Microbial omega-3 oils from other single-cell microalgae species have been developed in the past or are under current development or are currently traded. Examples are oils from *Euglena and Cryptecodinium cohnii*, which is used for infant nutrition. Some microbial omega-3 oils that have been traded in the past are oils from *Ulkenia*.

Currently, due to the lack of an international standard, microbial omega-3 oils are traded with differing levels of information. This makes it difficult for authorities to judge whether a particular type of oil is acceptable, and consumers are unable to make an informed choice.

In this regard, it is therefore proposed to develop an inclusive Codex Standard that can be easily updated to include other microbial omega-3 oils as newer types of oils increase in importance in international trade.

Establishing a Codex Standard for microbial omega-3 oils containing quality and compositional factors will ensure fair practices in trade in these commodities as well as ensure consumers' health protection, in line with Codex Alimentarius purpose and goals.

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[1] US Pharmacopeia - Food Chemical Codex (FCC). USP-FCC Schizochytrium Oil. https://online.foodchemicalscodex.org/uspfcc/document/6_GUID-DE13986B-B98E-413F-B133- 8516D1F776E7_50101_en-US?source=TOC.

[2] Australian Government. Department of Health and Aged Care. Therapeutic Goods Administration. EPA-rich Nannochloropsis oculata oil. https://www.tga.gov.au/resources/resource/compositional-guidelines/epa-rich- nannochloropsis-oculata-oil.

The Codex Alimentarius Commission has developed Standards for almost all fats and oils commonly used in food. However, microbial omega-3 oils are increasingly important foodstuffs, for which up to now no specific Codex Standard has been developed, which means that no quality standards for these types of oils are applicable globally. Neither the Codex *Standard for Edible Fats and Oils not Covered by Individual Standards* (CXS 19-1981) nor the *Standard for Named Animal Fats* (CXS 211-1999) nor the *Standard for Fish Oils* (CXS 329-2017) adequately cover the specific nature of microbial omega-3 oils.

3. The main aspects to be covered.

The proposed new work to establish a Standard for microbial omega-3 oils includes the following sections, following the format for Codex Commodity Standards provided by the Codex Procedural Manual (Twenty-eighth edition, 2023) and the structures of existing Codex Standards for fats and oils:

- Scope
- Description
- Essential composition and quality factors
- Food additives
- Contaminants
- Hygiene
- Labelling
- Methods of analysis and sampling
- Tables with characteristic lipids/fatty acid composition of the described oils.

Further detail on the main aspects to be covered and addressed by the proposed new work are indicated in the Annex to this project document.

4. An assessment against the criteria for the establishment of work priorities General criterion

The Codex Alimentarius Commission has a mandate of protecting consumers' health and ensuring fair practices in food trade. The proposed new Standard for microbial omega-3 oils, containing quality and compositional factors, will meet this criterion by promoting consumer protection from the point of view of health, food safety and ensuring fair practices in the food trade, assuring product authenticity and traceability, taking into account the identified needs of developing countries.

Criteria applicable to commodities

a) Volume of production and consumption in individual countries and volume and pattern of trade between countries

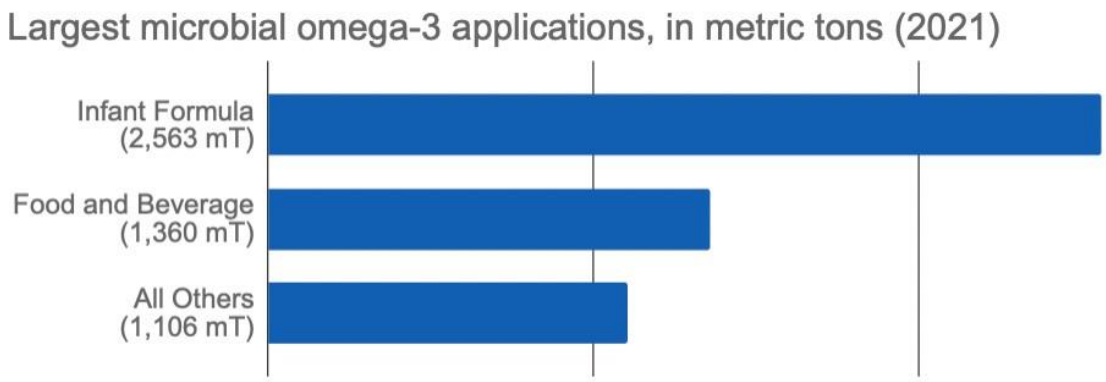
Microbial omega-3 oils for human consumption are a high value commodity. The international trade in processed microbial omega-3 oils suitable for human consumption reached over 5,029 metric tons and 264.6 million USD in 2021. Both the production and global trade of microbial omega-3 oil is increasing, as growth in the demand as well as trade of this commodity is projected to continue.[3]

Microbial omega-3 strain selection and growth condition are optimized to produce a certain type of omega-3 (high EPA, high DHA, etc.), and can be grown by fermentation in tanks, or grown in open ponds (raceway ponds) or photobioreactors.

Microbial omega-3 oils are used mainly for segments where the ingredient characteristics justify it: fortified infant formula and foods, usually for a high content of DHA, and specialized food supplements, in particular for consumers wishing to consume omega-3 oils of a non-fish origin.

The figure below shows that the largest microbial omega-3 oil volume is used by two applications, infant formula and food and beverage:[4]

[3] Market survey data, Global Organization for EPA and DHA Omega-3s (GOED).
[4] Market survey data, GOED



Traditionally, microbial omega-3 oils have been used in food supplements tailored to specific groups of users (like vegetarian/vegan consumers, or people concerned about fish allergies) and have been high in DHA. As shown above, infant formula is now the largest application followed by food and beverage. In recent years, the production volume of high-EPA microbial omega-3 oils has increased, and it is likely that the resulting innovation will attract new consumer segments. In this regard, advances in production methods and declining prices are starting to make these oils attractive to a larger audience.

All geographic markets grew in volume, but the fastest increases (as a percentage of the demand) were observed in the developing markets, driven by increased penetration into infant formula.

Microbial omega-3 oils trade growth

Microbial omega-3 oils trade volumes, and projected continued growth in global production, demand and trade of microbial omega-3 oils, are described as follows:

In 2021, by Application:

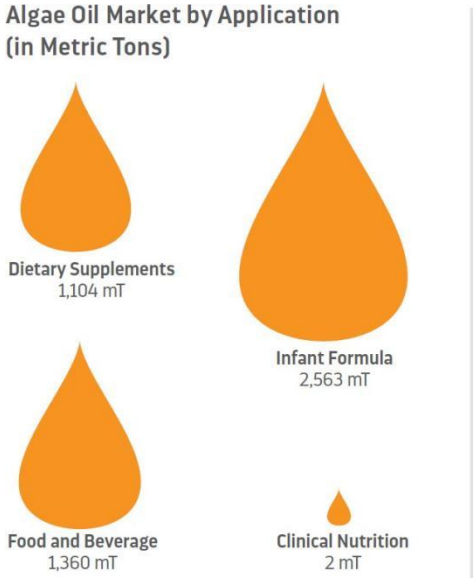
Infant formula, the largest application, uses 51.0% of microbial omega-3 oil volume, growing at an annual rate of 2.8%, particularly in Asian countries.

The next application, food and beverage, commands 27.0% of the volume of microbial omega-3 oils, and grew at a healthy 9.6%, driven by rapid growth in the large European market. An increased focus on prevention has resulted in the demand for healthy (including fortified) foods. The US market and the demand in the Asia-Pacific region also grew at a rapid pace.

Microbial omega-3 oils have traditionally represented a small fraction of the oil volumes used in food supplements, but they are gaining momentum. In 2021, these oils comprised less than 1.6% of the volume (and 9.4% of the value) of omega-3 ingredients used in this sector. The major obstacle to larger representation has been their higher cost, but advances in production methods — and therefore more manufacturers coming onstream with algal/protist capacity — and economies of scale have resulted in more competitive pricing. Additionally, consumer interest in plant-based ingredients and a growing variety of strains and compositions have helped microalgae achieve a global growth rate of 10.3%.

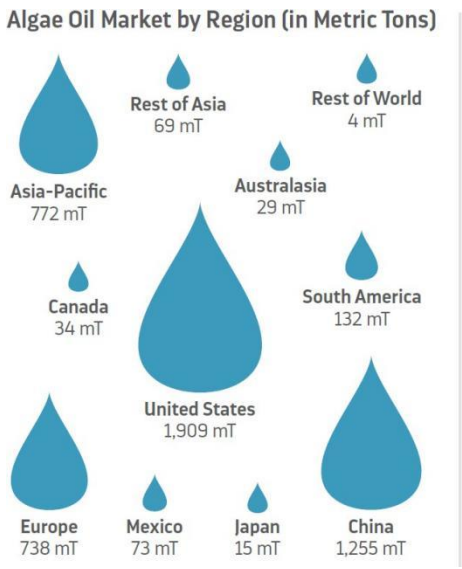
The following figures provide further detail of microbial omega-3 growth in trade volumes by application:[5]

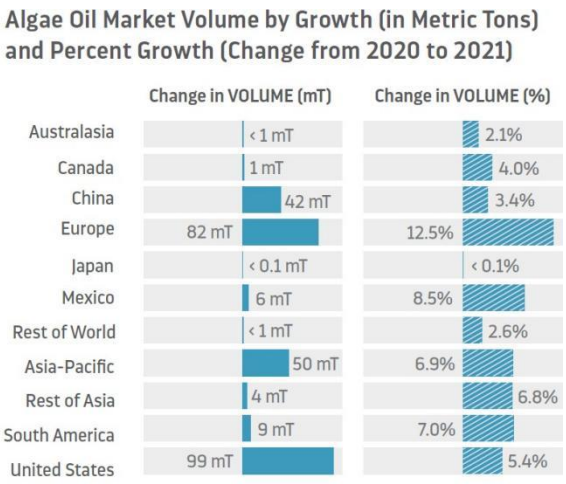
[5] Market survey data, GOED



In 2021, by region.

The following figures provide further detail of microbial omega-3 growth in trade volumes by region.[6]





[6] Market survey data, GOED

2021, by Region and Application

The following tables provide further detail of microbial omega-3 growth in trade volumes, in metric tons, mT, and value in millions of US dollars, by region and application:[7]

Volumes in mT

	Infant Formula			Food and Beverages			Dietary Supplements			Clinical Nutrition		
	2020	2021	Change	2020	2021	Change	2020	2021	Change	2020	2021	Change
Australasia	10	10	1.0%	12	13	3.2%	1	1	2.2%	-	-	-
Canada	8	8	-1.3%	16	17	5.7%	8	9	6.2%	-	-	-
China	1,025	1,059	3.3%	162	168	4.1%	25	26	4.0%	-	-	-
Europe	114	115	1.1%	255	301	17.9%	115	137	19.9%	-	-	-
Japan	-	-	-	13	13	0.8%	2	2	2.0%	-	-	-
Mexico	4	4	4.9%	63	69	8.7%	-	-	-	-	-	-
Rest of the World	-	-	-	3	4	3.2%	< 1	< 1	2.9%	-	-	-
Asia-Pacific	394	414	5.3%	201	218	8.9%	89	97	8.8%	-	-	-
Rest of Asia	20	20	4.1%	43	47	8.1%	2	2	2.2%	-	-	-
South America	41	42	2.2%	80	88	9.4%	2	2	3.1%	-	-	-
USA	878	890	1.4%	392	423	8.0%	90	98	9.6%	2	2	5.9%

Volumes in metric tons (mT)

Volumes of trade in millions of US dollars

	Infant Formula			Food and Beverages			Dietary Supplements			Clinical Nutrition		
	2020	2021	Change	2020	2021	Change	2020	2021	Change	2020	2021	Change
Australasia	$0.4	$0.4	-2.0%	$0.7	$0.7	0.2%	$0.1	< 0.1	-0.8%	-	-	-
Canada	$0.3	$0.3	-4.2%	$0.9	$1.0	2.6%	$0.6	$0.6	3.1%	-	-	-
China	$44.8	$45.0	0.3%	$9.6	$9.7	1.1%	$1.8	$1.8	0.9%	-	-	-
Europe	$5.0	$4.9	-1.8%	$15.2	$17.3	14.4%	$8.3	$9.6	16.4%	-	-	-
Japan	-	-	-	$0.7	$0.7	-2.1%	$0.1	$0.1	-1.0%	-	-	-
Mexico	$0.2	$0.2	1.8%	$3.8	$4.0	5.5%	-	-	-	-	-	-
Rest of the World	-	-	-	$0.2	$0.2	0.2%	< 0.1	< 0.1	< 0.1%	-	-	-
Asia-Pacific	$17.2	$17.6	2.2%	$11.9	$12.6	5.7%	$6.4	$6.8	5.7%	-	-	-
Rest of Asia	$0.9	$0.9	1.1%	$2.6	$2.7	5.0%	$0.2	$0.2	-0.8%	-	-	-
South America	$1.8	$1.8	-0.8%	$4.8	$5.1	6.3%	$0.1	$0.1	0.1%	-	-	-
USA	$38.4	$37.8	-1.5%	$23.3	$24.4	4.9%	$6.5	$6.9	6.4%	$0.1	$0.1	2.8%

Volumes in millions of US dollars (MM US$)

[7] Market survey data, GOED

Forecast

These are the volumes by region and by application for 2021, followed by the growth rate from 2020-2021 and then the average annual growth rate expected to be seen to 2024.[8]

Forecast by region:

	2021 volume (Tons)	2020-21 (Percentage change)	To 2024 (average)
Australasia	29	2.1%	2.1%
Canada	34	4.0%	4.3%
China	1,255	3.4%	3.4%
Europe	738	12.5%	9.6%
Japan	15	<0.1%	0.7%
Mexico	73	8.5%	8.5%
Rest of the World	4	2.6%	2.6%
Asia-Pacific	772	6.9%	7.0%
Rest of Asia	69	6.8%	6.8%
South America	132	7.0%	7.2%
USA	1,909	5.4%	5.6%

Forecast by application:

	2021 volume (Tons)	2020-21 (Percentage change)	To 2024 (average)
Infant Formula	2,563	2.8%	2.9%
Food and Beverage	1,360	9.6%	8.0%
Dietary Supplements	1104	10.3%	10.1%
Clinical nutrition	2	5.9%	5.9%

b) Diversification of national legislations and apparent resultant or potential impediments to international trade

As no internationally harmonised standard for microbial omega-3 oils exists, difficulties in and impediments to trade occur. Microbial omega-3 oils are currently traded with various levels of detail concerning their source, composition and quality. As there are variations possible in the degree of processing, chemical forms of the oil, fatty acid profile requirements, quality requirements and addition of additives, it is difficult for national authorities to judge whether individual shipments are acceptable.

Currently, pharmacopeial monographs, guidelines, standards and regulations exist for microbial omega-3 oils in Australia, China, the European Union, the USA, Brazil and Chile, providing orientation or authorising the use of microbial omega-3 oils with different levels of information in a variety of food applications.

This new work will assist in providing an internationally harmonized approach for quality and compositional factors as well as the labelling and trade in microbial omega-3 oils, embracing future innovation.

c) International or regional market potential

Today, both the production of microbial omega-3 oils, as well as the consumption of finished omega-3 rich food products containing such oils already occurs globally.

d) Amenability of the commodity to standardisation

Microbial omega-3 oils are approved for sale in different parts of the world, so therefore are a commodity amenable to standardization by the Codex Committee on Fats and Oils, CCFO.

[8] Market survey data, GOED

e) Coverage of the main consumer protection and trade issues by existing or proposed general standards

The Codex Alimentarius Commission has developed Standards for almost all fats and oils commonly used in food. However, microbial omega-3 oils are increasingly important foodstuffs, for which up to now no specific Standard has been developed. Neither the *Codex Standard for Edible Fats and Oils not Covered by Individual Standards* (CXS 19-1981) nor the *Standard for Named Animal Fats* (CXS 211-1999) nor the *Standard for Fish Oils* (CXS 329-2017) adequately cover the specific nature of microbial omega-3 oils.

f) Number of commodities which would need separate standards indicating whether raw, semi-processed or processed.

There are several types of microbial omega-3 oils. The proposal is to develop an inclusive Codex Standard that can be easily updated to include other microbial omega-3 oils as newer types of oils increase in importance in international trade. Therefore, the work will cover a commodity that encompasses the various relevant microbial omega-3 oils.

g) Work already undertaken by other international organizations in this field and/or suggested by the relevant international intergovernmental body(ies)

There is no existing work already undertaken on an international standard for the food use of microbial omega-3 oils. In addition, so far no similar work by other international organizations has been discovered. A Codex Standard covering all necessary quality and compositional factors is therefore required.

5. Relevance to the Codex strategic objectives

The proposed new work to establish a Standard for microbial omega-3 oils containing quality and compositional factors will ensure fair practices in trade in these commodities as well as ensure consumers' health protection, in line with Codex Alimentarius purpose and goals.

The objective, as described above, is in line with the Codex Strategic Plan 2020-2025, adopted by the 42nd Session of the Codex Alimentarius Commission. In this regard, the new work proposal will contribute particularly to Goals 1, 2 and 3:

Goal 1: *"Address current, emerging and critical issues in a timely manner."*

Goal 2: *"Develop standards based on science and Codex risk-analysis principles."*

Goal 3: *"Increase impact through the recognition and use of Codex Standards."*

6. Information on the relation between the proposal and other existing Codex documents as well as other ongoing work

The Codex Alimentarius Commission has developed Standards for almost all fats and oils commonly used in food. However, microbial omega-3 oils are increasingly important foodstuffs, for which up to now no specific Standard has been developed. Neither the *Codex Standard for Edible Fats and Oils not Covered by Individual Standards* (CXS 19-1981) nor the *Standard for Named Animal Fats* (CXS 211-1999) nor the *Standard for Fish Oils* (CXS 329-2017) adequately cover the specific nature of microbial omega-3 oils.

The proposed new work to establish a Standard for microbial omega-3 oils will take into account the provisions of relevant general subject standards, such as: the *General Principles of Food Hygiene* (CXC 1-1969), the *General Standard for the Labelling of Prepackaged Foods* (CXS 1-1985), the *General Standard for Contaminants and Toxins in Food and Feed* (CXS 193-1995) and the *General Standard for Food Additives* (CXS 192-1995).

7. Identification of any requirement for and availability of expert scientific advice

The need for expert advice may be identified during the course of the work.

8. Identification of any need for technical input to the standard from external bodies so that this can be planned for

No technical input other than that which is to be found in the CCFO is required at this time.

9. The proposed timeline for completion of the new work

The work will be completed in 2 sessions of the Committee.