



Food and Agriculture
Organization of the
United Nations



World Health
Organization

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Agenda Item 4.1

CX/CAC 22/45/3
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JOINT FAO/WHO FOOD STANDARDS PROGRAMME

CODEx ALIMENTARIUS COMMISSION

Forty-fifth Session

WORK FROM THE CODEx COMMITTEE ON FATS AND OILS (CCFO) FOR ADOPTION OR APPROVAL BY THE COMMISSION

1. The Commission is invited to adopt the draft standards and related texts submitted for final adoption (Step 8 or Step 5/8) in accordance with the Procedures for the Elaboration of Codex Standards and Related Texts. The relevant texts from CCFO are listed in **Part 1** of this document.
2. The Commission is also invited to adopt proposed draft standards and related texts submitted at Step 5 of the Uniform Procedure for the Elaboration of Codex Standards and Related Texts. The relevant texts from CCFO are listed in **Part 2** of this document and, if adopted, will be advanced to Step 6 for further comments and consideration by CCFO28.
3. Comments received regarding proposed draft standards and related texts from CCFO and submitted in accordance with the Procedures for the Elaboration of Codex Standards and Related Texts are contained in CX/CAC 22/45/3 Add.1.
4. The Commission is furthermore invited to approve proposals to undertake new work or revise a standard, taking into account the critical review conducted by the Executive Committee, and to decide which subsidiary body or other body should undertake the work. The relevant proposals from CCFO are listed in **Part 3** of this document, including the reference of the project document in the relevant report. The project documents are also compiled in this document for ease of reference and to ensure availability in all six languages. The Commission is invited to consider these proposals in the light of its *Strategic Plan 2020-2025* and the *Criteria for the Establishment of Work Priorities* and *Criteria for the Establishment of Subsidiary Bodies of the Codex Alimentarius Commission*.
5. The Commission is also invited to endorse relevant proposals from CCEXEC regarding extension of deadlines for completion of work.

Part 1 – Standards and related texts submitted for final adoption

Codex body	Standards and Related Texts	Reference	Job No.	Step
CCFO	Proposed draft revision to the <i>Standard for Named Vegetable Oils</i> (CXS 210-1999): Essential composition of Sunflowerseed oils	REP22/FO, Paragraph 45, Appendix III	N09-2017	5/8
	Editorial amendments/changes to the <i>Code of Practice for the Storage and Transport of Edible Fats and Oils in Bulk</i> (CXC 36-1987): Appendix 2	REP22/FO, Paragraph 144(iii), Appendix IX	-	-

Part 2 – Standards and related texts submitted for adoption at Step 5

Codex body	Standards and Related Texts	Reference	Job No.	
CCFO	Proposed draft revision to the <i>Standard for Named Vegetable Oils</i> (CXS 210-1999): inclusion of avocado oil ¹	REP22/FO, Paragraph 82(i,iv), Appendix IV	N12-2017	5

Part 3 – Proposals to elaborate new standards and related texts

Codex Body	Text	Reference and project document
CCFO	Amendment/revision to the <i>Standard for Named Vegetable Oils</i> (CXS 210-1999) to include - Camellia seed oil; - Sacha inchi oil; - High oleic acid soya bean oil	<ul style="list-style-type: none"> • REP22/FO, Appendices V, VI, VIII • Annex I, II and III of this document
CCFO	Amendment/revision to the <i>Standard for Fish Oils</i> (CXS 329-2017) - Inclusion of Calanus oil	<ul style="list-style-type: none"> • REP22/FO, Appendix VII • Annex IV of this document

¹ CCFO requested an extension of the deadline for completion of the work to CCFO28, which has been supported by CCEXEC81 and CCEXEC82.

PROJECT DOCUMENT

PROPOSAL FOR NEW WORK ON AMENDMENT/REVISION TO THE CODEX STANDARD FOR NAMED VEGETABLE OILS (CXS 210-1999) - INCLUSION OF CAMELLIA SEED OIL

(For approval)

1. PURPOSE AND SCOPE

The purpose of this new work is to amend the *Codex Standard for Named Vegetable Oils (CXS 210-1999)* to include camellia seed oil derived from the seed of camellia (*Camellia oleifera Abel*), which has been scientifically proven to enhance functionality and benefit health due to its high oleic acid content (68–87%) and abundant natural antioxidants^{1,2,3}. The amendment would enable Codex Member countries and the food industry to appropriately characterize, name, and market camellia seed oil developed for nutritional benefits for consumers and diverse uses for the food processing industry.

The scope of this work is the addition of camellia seed oil in the *Codex Standard for Named Vegetable Oils (CXS 210-1999)*. The compositional characteristics will be provided for associated tables in the Standard.

2. RELEVANCE AND TIMELINESS

Camellia seed oil is derived from the seeds of camellia (*Camellia oleifera Abel*). Camellia has a long cultivation history, spanning over 2300 years, and has been cultivated extensively as an oil crop in many countries, including China, the Philippines, India, and South Korea³. Unlike other seed-oil plants that are grown on arable land, camellia normally grow on mountain slopes, which allows new crops to make full use of marginal land. Today, Camellia seed oil serves as the main cooking oil in China's southern provinces. Camellia seed oil is rich in oleic acid (68–87%) and contains a multitude of natural antioxidants, such as squalene, phytosterol (β -sitosterol, campesterol and stigmasterol), polyphenols, fat-soluble vitamins (Vitamins A, E), sasanquasaponin, and other functional substances^{1,3}. These components with various biological activities are useful for lowering triglycerides and cholesterol, thus preventing hypertension, heart disease, arteriosclerosis, and other diseases. Also, it could be used as a base oil for high-level skin care oil through further intensive processing.



The flower and fruits of Camellia



The Camellia fruits



Camellia seed oil

Figure 1 The Camellia plant and Camellia seed oil

To facilitate international trade in food products and ingredients, Codex standards often are used as the basis for names and specifications for such products to ensure fair trade practices. With its health benefits, Camellia seed oil usage is expected to experience rapid growth over the next several years⁴. Therefore, it is important to have consistent naming and specifications to ensure the product quality and fairness for international trade.

3. MAIN ASPECTS TO BE COVERED

The proposed new work to amend the *Codex Standard for Named Vegetable Oils (CXS 210-1999)* to include camellia seed oil will include the following aspects :

- Description
- Essential composition and quality factors

¹ Yang Ruinan, *et al.* A review of chemical composition and nutritional properties of minor vegetable oils in China, *Trends in Food Science & Technology*, Volume 74, 2018, Pages 26-32.

² Xiaoqin Wang, *et al.* Profiling and quantification of phenolic compounds in Camellia seed oils: Natural tea polyphenols in vegetable oil, *Food Research International*, Volume 102, 2017, Pages 184-194.

³ Fei Luan, *et al.* Recent advances in *Camellia oleifera Abel*: A review of nutritional constituents, biofunctional properties, and potential industrial applications, *Journal of Functional Foods*, Volume 75, 2020, 104242.

⁴ Liang, H., *et al.* Camellia as an Oilseed Crop, *HortScience horts*, 2017,52(4), 488-497.

- Establishment of general requirements for camellia seed oil derived from the seed of camellia (*Camellia oleifera* Abel)
- Establishment of specific requirements for camellia seed oil
- 2.1 Product definition. Include the description camellia seed oil
- 3.0 Composition and quality factors
- Table 1. Include the fatty acid composition of camellia seed oil
- Table 2 Quality characteristics of camellia seed oils
- Other quality and compositional factors
- Table 3, and Table 4 the content of sterol and tocopherol will be proposed.

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

This proposal is consistent with the Criteria for the Establishment of Work Priorities applicable to both commodities and general subjects.

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

Camellia is a kind of evergreen tree cultivated in subtropical region. It is one of the four largest woody oil plants (others are oil palm, olive, coconut) in the world. Affected by geographical and climatic conditions, Camellia is mainly grown in East Asia and Southeast Asia, such as China, Japan, Viet Nam, Thailand, etc. In China, the area under Camellia cultivation has increased each year, from 45 million mu in 2008 to 68 million mu in 2019 (1mu = 666.667m²)⁵. Around 700 kilo tons of camellia seed oil were produced in 2019, and 600 kilo tons of camellia seed oil is estimated to be consumed in food market.

According to the data from the General Administration of Customs of China, in 2018 and 2019, a total of 171 and 262 tons of camellia seed oil was exported, of which worth \$2.05 million (USD) and \$3.24 million (USD). These numbers went up to 338 tons and \$4.17 million (USD) in 2020, almost doubled compared to 2018. More than 15 countries import camellia oil from China, the top trading partners are Japan, USA, Republic of Korea, Canada, France, and Australia.

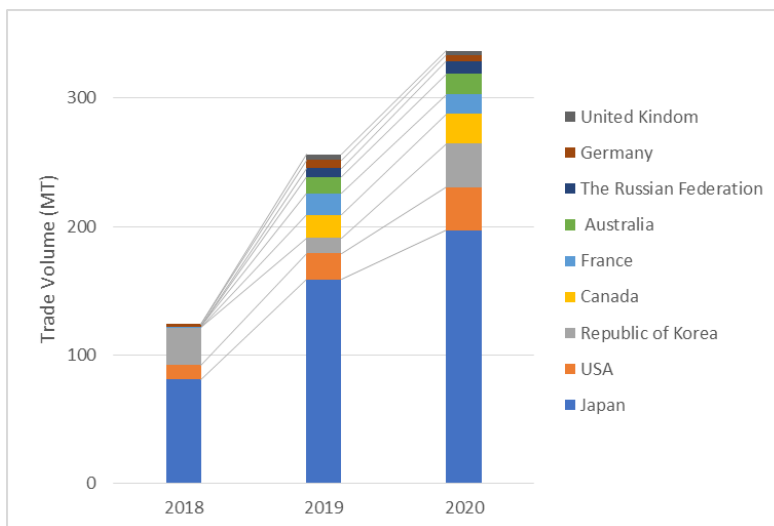


Figure 1 Camellia seed oil exports in Metric ton by main destinations from 2018 year to 2020 year. (Data from the General Administration of Customs of China)

⁵ Source: the website of China State Administration of Forestry and Grassland, <http://www.forestry.gov.cn/>

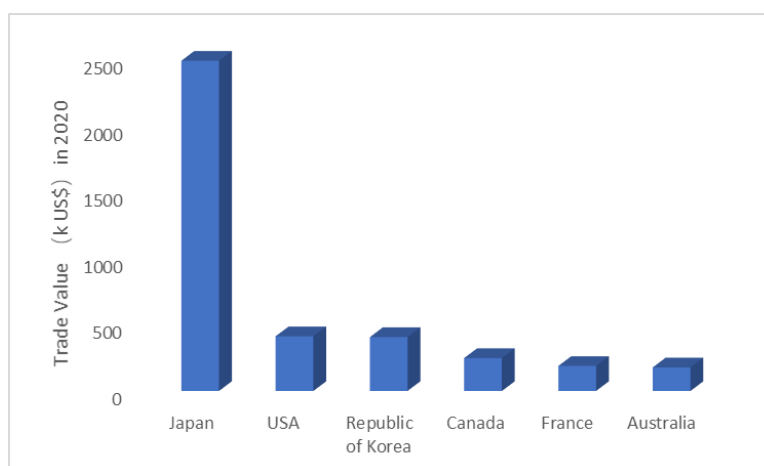


Figure 2. The trade value of Camellia seed oil by top trading partners in 2020.

(Data from the General Administration of Customs of China)

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

The voluntary National Standard for camellia seed oil (GB/T 11765) in China was first published in 2003 and revised in 2018, which establishes the general specifications of camellia seed oil for domestic market. Food Chemicals Codex (FCC) responsible by United States Pharmacopeia published the standard of Camellia Seed (*Camellia oleifera*) Oil in 2018.

According to feedback from main camellia seed oil export companies, the current international market has different requirements for Camellia Seed specifications. With the potential increased demand in international market, the proposed amendment for camellia seed oil to the Codex *Standard for Named Vegetable Oils* (CXS 210-1999) will help to promote the wide-recognized, science-based standards, assure product quality, protect consumer's health, and facilitate global trade in camellia seed oil. Without such a standard, it is expected that national legislations or standards will differ, which may affect international trade in this product. In addition, it is expected that the lack of a Codex standard might trigger proliferation of private standards for this oil and contribute to the confusion and deceptive practices in trade in oils that are unsuitable for their intended uses.

(c) International or regional market potential

As indicated above, a significant international and regional market potential exists, especially as global health authorities call for the use of nutritionally preferred alternatives to edible oils that are high in saturated fatty acids. A report published by ABSOLUTE REPORTS in 2019 showed that in the coming years there will be an increasing demand for Camellia Oil in the regions of USA, Europe and China, the worldwide market for Camellia Oil is expected to grow at a CAGR of roughly 5.6% over the next five year⁶.

(d) Amenability of the commodity to standardization

This is a proposed amendment to the Codex *Standard for Named Vegetable Oils* (CXS 210-1999) to include camellia seed oil. The addition of this oil including essential factors related to composition, health and quality would enable the standardization of oils of this type and contribute to consumer protection.

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

As indicated above, development of a Codex standard for camellia seed oil will enhance consumer protection by discouraging food fraud practices and the development of private standards.

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

Not relevant.

⁶ Source: <https://www.absolutereports.com/global-camellia-oil-market-13837567>

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

None known.

5. RELEVANCE TO THE CODEX STRATEGIC OBJECTIVES

As the focus and needs of establishing a Codex standard for camellia seed oil is observed in international trade, this proposed amendment is in accordance with the Goal 1 of Codex Strategic Plan 2020-2025: Address current, emerging and critical issues in a timely manner.

Specifically, regarding objective 1.1, "Identify needs and emerging issues", this proposed amendment serves as a proper respond to the need of promoting fair trade of camellia seed oil.

Further, regarding objective 1.2, "Prioritize needs and emerging issues", with current time manner, the proposed amendment will become the essential standard for Codex members with camellia seed oil trade, meanwhile the potential of camellia seed oil trade will be observed by all Codex members.

6. INFORMATION ON THE RELATION BETWEEN THE PROPOSAL AND OTHER EXISTING CODEX DOCUMENTS

None.

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

If expert scientific advice is required, we're committed to provide the contact of experts who are responsible for the proposed text and the research papers.

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

Relevant SDOs, such as ISO, AOCS, are expected to participate in the review of the Codex standard.

9. PROPOSED TIMELINE FOR COMPLETION OF THE NEW WORK, INCLUDING THE START DATE, THE PROPOSED DATE FOR ADOPTION AT STEP 5/8, AND THE PROPOSED DATE FOR ADOPTION BY THE COMMISSION

It is expected that the development of this standard would be conducted in two CCFO sessions or less (effective CCFO28), depending on the agreement reached by the Committee.

PROJECT DOCUMENT**AMENDMENT/REVISION TO THE CODEX STANDARD FOR NAMED VEGETABLE OILS (CXS 210-1999)
- INCLUSION OF SACHA INCHI OIL****(For approval)****1. PURPOSE AND SCOPE**

The purpose of the work proposal is:

- To develop a framework for amending the *Standard for named vegetable oils* (CXS 210-1999) by adding the definition of sacha inchi oil to Section 2 and including its fatty acid profile in the standard, in order to establish quality, purity and food safety criteria for this edible oil and facilitate trade in this product.
- Sacha inchi (*Plukenetia Volubilis* L.) is also known as *maní del monte* ("forest peanut"), *maní estrella* ("star-shaped peanut") (Colombia), *maní del inka* ("Inca peanut") and "supua" (Bolivia).

Consumption of this oil can be included in the same food categories and at the same use levels at which flaxseed oil is currently marketed. This includes its use as a dressing, for example, on salads, and its incorporation into a range of foods and food supplements, as well as in lightly fried food (smoke point: 255°C).

The scope of this Draft Technical Standard is international.

2. RELEVANCE AND TIMELINESS

The work proposed falls within the remit of the Codex Committee on Fats and Oils (CCFO), i.e., "to elaborate world wide standards for fats and oils of animal, vegetable and marine origin including margarine and olive oil.

The new work will include the quality and composition characteristics of sacha inchi oil to enable the quality control of the product, facilitate international trade, improve consumer protection and prevent adulteration as well as deceptive and fraudulent practices. To reach these goals, the quality and authenticity of sacha inchi oil will be verified on the basis of the latest scientific developments.

Sacha inchi is a native plant of Peruvian Amazonia which was first described as a species by naturalist Linnaeus in 1753. References to its existence have been made over time in historical documents, such as the "Royal Commentaries of the Incas" (by Inca Garcilaso de la Vega), which mentions that indigenous people used the word "inchic" to name the fruit that Spaniards called "peanut" (*maní*), as well as the way it was consumed and used.

3. MAIN ASPECTS TO BE COVERED

The main aspect to be covered is the inclusion of the product in Section 2.1 Product definition, as well as in Table 1: Fatty acid composition of vegetable oils as determined by gas liquid chromatography from authentic samples (expressed as percentage of total fatty acids) of CXS 210. The new work proposed will follow the Codex structure and will include the quality requirements for sacha inchi oil:

- a. Scope.
- b. The definition of cold pressed oils.
- c. Quality and composition characteristics.
- d. Contaminants and food safety related issues.
- e. Organoleptic characteristics.
- f. Purity criteria.
- g. Food additives.
- h. Labelling.
- i. Methods of analysis

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

This new work meets the following criteria applicable to the product:

General criteria

Consumer protection from the point of view of health, food safety, ensuring fair practices in the food trade and taking into account the identified needs of developing countries.

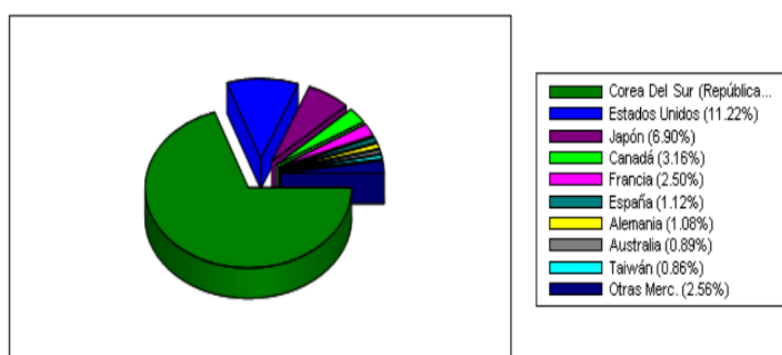
- a) Consumption of sacha inchi oil has increased due to its beneficial components and it might be considered as a functional food for consumer protection, so the amendment to CXS 210-1999 might be considered in order to provide related information to ensure safety issues for the production and trade of this edible oil.
- b) Promoting consumer protection and the prevention of fraudulent practices by determining authenticity specifications.
- c) Providing greater assurance of the quality of the product to meet consumer needs and the minimum requirements for food safety.
- d) Establishing levels of standardization based on the properties of the product to meet industrial and consumer needs with exactness and credibility.

Criteria applicable to general subjects

4.1 Volume of production and consumption in individual countries and pattern of trade between countries:

Sacha inchi oil exports in kg by main destination countries in 2017

EXPORTACIONES DEL PRODUCTO SACHA INCHI SEGUN SUS PRINCIPALES MERCADOS EN EL 2017



Source: SUNAT, compiled by PROMPERU

FIGURE 1 – Sacha inchi exports, main destination markets - 2017

Below are the exports of sacha Inchi (in all presentation forms) to its different destination markets during 2018, and from January to June 2019 (see Figure 2 and Figure 3). In 2018, the Republic of Korea continued to rank first among export destinations.

Exportaciones Sacha Inchi en 2018. Valores FOB en Miles US\$

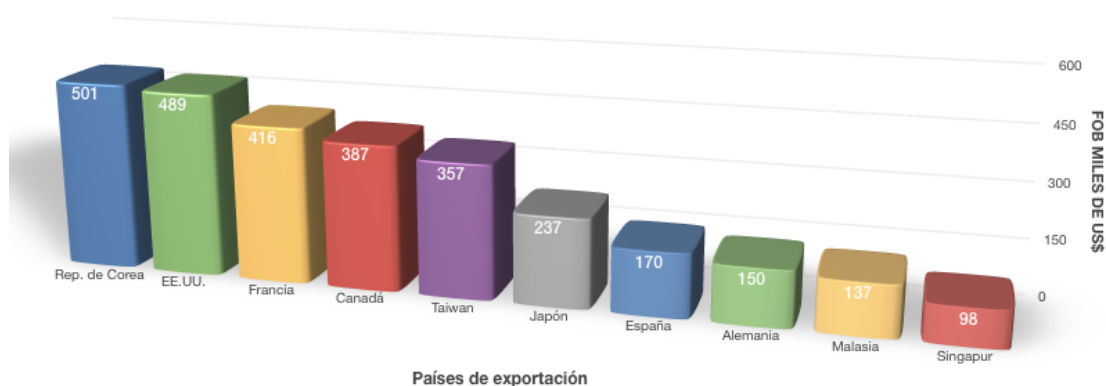


Figure 2. Exports of sacha inchi in all presentation forms to its main destination markets during 2018 (Source: Own elaboration based on data from MINCETUR).

Exportaciones Sacha Inchi desde enero hasta junio 2019. Valores FOB en Miles US\$

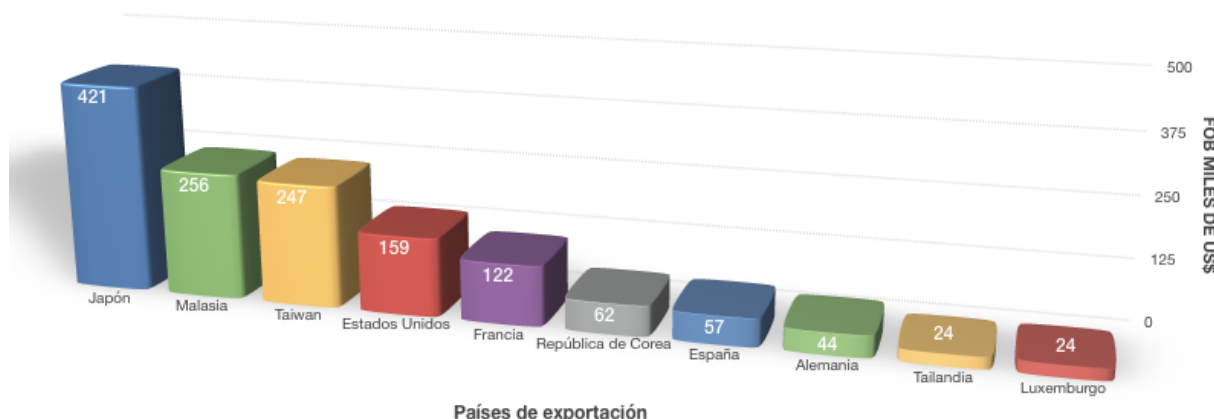


Figure 3: Exports of sachu inchi in all presentation forms to its main destination markets from January to June 2019 (Source: based on data from MINCETUR).

Sachu inchi in other countries:

In Ecuador, the Ministry for Agriculture, Livestock, Aquaculture and Fisheries (MAGAP) promoted a project to grow sachu inchi, through the Second Kennedy Round or 2KR programme (assistance to low-income farmers) within the Ecuador-Japan cooperation framework (MAGAP, 2014).

Currently, 3.5 tons per hectare are obtained per year, which means that the total production of sachu inchi in the country amounts to 2 845.5 tons. In percentage terms, it is estimated that the province of Manabí consolidates 30.75 % of production, with 813 ha (Burbano, 2015). The largest production area is Manabí, with 250 ha. In the northwest of the Pichincha area, land cultivated with this crop extends over 150 ha.

In Bolivia, the National Alternative Development Fund (FONADAL, by its Spanish acronym) used resources from the European Union (250 000 bolivars) to finance the production of sachu inchi in 50 hectares of the Palos Blancos municipality. This benefits over 50 families in the region. The director for projects stated that, since this is an extremely valuable food product, the government will prioritize its production for the nursing allowance due to its nutritional and medicinal properties. The surplus will be exported to Korea and England [La Razón newspaper, November 10th, 2013]. [La Sociedad de BOLIVIA newspaper, December 12th, 2014]

In Colombia, since 2012, Green M & A Solutions has been working to replace illegal crops, so that farmers who plant coca may grow sachu inchi instead, a dry fruit that is considered to be a superfood. In 2015, Green was acquired by the American company QED Connect Inc. and created Inca Snacks, a business that already exports sachu inchi and Colombian nuts (seeds) to the United States, where they are roasted and packed for retail. Companies help farmers grow the Inca seeds (sachu inchi) in projects located in Choco, Antioquia and Nariño, very important states of Colombia. The agreement is a key element to secure financing and a guarantee from USAID. Their plan is to use 35 000 hectares for production in the country. To reach this goal, they work with USAID, which is the United States cooperation agency, and the Colombian government. The sachu inchi harvested area has expanded in Colombia since 2007 (see Figure 4).

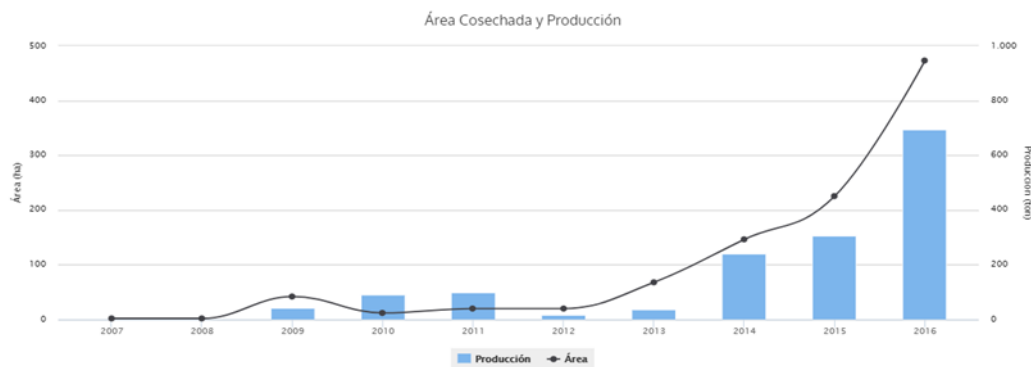


Figure 4: Colombia: Sachu inchi, harvested area and production between 2008 and 2016 [Source: Agronet - Colombian Government]

4.2 Diversification of national legislation and apparent resultant or potential impediments to international trade

Member countries could use the Codex standard as a reference to establish their national regulations.

At present, producing and consuming countries often apply national regulations which are different in important aspects related to the quality and authenticity parameters and the methods of analysis.

4.3 International or regional market potential

Sacha inchi production is expected to increase considerably, with a number of other countries becoming producers, such as some in Asia.

4.4 Amenability of the commodity to standardisation

There are two national standards (NTE INEN 2688:2014 ACEITE DE SACHA INCHI (sacha inchi oil) from Ecuador and NTP 151.400:2018 SACHA INCHI. Oil. Requirements. 3rd edition from Peru).

This means that sacha inchi oil has been standardized for over 10 years, and demonstrates by the amenability of sacha inchi to international standardization.

5. RELEVANCE TO THE CODEX STRATEGIC OBJECTIVES

The new work proposed would help ensure fair and equitable practices in international trade of sacha inchi oil by considering the special needs and concerns of all countries, since it will meet the following strategic goals and priorities of the 2020-2025 Codex Alimentarius Commission Strategic Plan.

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

1.1 Identify needs and emerging issues.

This amendment to the Codex standard to make it more globally representative will help ensure its wide adoption by member countries and minimize the potential negative effects of technical regulations in international trade, preventing these from becoming unnecessary technical barriers to trade.

1.2 Prioritize needs and emerging issues.

In this way, Codex will address this emerging issue in a timely manner, in addition to meeting the needs of members such as Peru, Ecuador and Colombia, which are interested in the international standardization of sacha inchi oil.

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

2.1 Use scientific advice consistently in line with Codex risk-analysis principles.

The study of sacha inchi oil is firmly based on scientific data, which has already been reviewed in the dossier submitted in connection with the Novel Food reports and the GRASS report.

2.2 Promote the submission and use of globally representative data in developing and reviewing Codex standards.

The development of a standard for sacha inchi oil, a biodiversity-related product, results in the protection of human health and the environment, because it considers aspects that, if not complied with, have negative effects on consumers. In addition, inadequate growing or exploitation affects the environment. However, the technical standard does not include these practices specifically. The standard can have a positive effect on trade, making it more equitable among countries, since it includes requirements for sacha inchi oil which constitute a point of reference for making agreements, regardless of the countries involved in its trade.

It is important to point out that sacha inchi must be grown using sustainable, environmentally friendly agriculture that ensures contaminant-free production. Good practices aimed at crop conservation help to maintain biodiversity. The essential ecologic characteristics of those ecosystems where sacha inchi occurs naturally must be kept and preserved, without performing any activities that pose a threat to their conservation. In this way, the genetic base will be kept, and then improvements will be made to obtain high-productivity varieties (good yields and oil content) able to resist pest and disease.

6. INFORMATION ON THE RELATION BETWEEN THE PROPOSAL AND OTHER EXISTING CODEX DOCUMENTS AS WELL AS OTHER ONGOING WORK

The *Standard for named vegetable oils* (CXS 210-1999) is connected with this subject, so an amendment to this standard is proposed in order to include sacha inchi oil in it.

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

None identified at the moment.

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

Relevant organizations, such as AOCS, are expected to participate in the review of the Codex standard.

9. PROPOSED TIMELINE FOR COMPLETION OF THE NEW WORK

It is expected that the development of this standard would be conducted in two CCFO sessions or less (effective CCFO28), depending on the agreement reached by the Committee.

PROJECT DOCUMENT**PROPOSAL FOR NEW WORK ON AMENDMENT/REVISION TO THE CODEX STANDARD FOR NAMED VEGETABLE OILS (CXS 210-1999), - INCLUSION OF HIGH OLEIC ACID SOYA BEAN OIL****(For approval)**

This project document has been developed according to the Codex Alimentarius Commission Procedural Manual, 27th Edition, 2019 Section II, Procedures for the Elaboration of Codex Standards and Related Texts, part 2. Critical review, proposals to undertake new work or to revise a standard (page 31).

PURPOSE AND SCOPE OF THE REVISION TO THE CODEX STANDARD

The purpose of this new work is to revise the *Codex Standard for Named Vegetable Oils* [CXS 210-1999, Adopted 1999. Revisions 2001, 2003, 2009, 2017, 2019. Amendment 2005, 2011, 2013, 2015, 2019] to include high oleic acid soya bean oil (also called high oleic acid soybean oil or high oleic soybean oil), which has enhanced functionality due to its relatively high oleic acid content. The revision would enable Codex member countries and the food industry to characterize, name, and market appropriately high oleic acid soya bean oil developed for improved functional and nutritional benefits for consumers and the food processing industry. Another purpose is to facilitate fair trade practices and to provide a new standard that is consistent with the two current Codex Standards for high oleic acid sunflower oil and high oleic acid safflower oil.

Functional benefits for high oleic acid soya bean oil include improved oil stability performance where high heat applications are involved (deep frying), longer shelf life for foods in which it is an ingredient (snack foods), and “neutral flavor” for foods prepared using the oil. Nutritional benefits include an increase in monounsaturated fatty acids and a decrease in both saturated fatty acids and undesirable trans-fats.

The scope of work is an assessment of the changes in the named fatty acids when compared with the soya bean oil currently listed in the *Codex Standard for Named Vegetable Oils* [CXS 210-1999]. Other compositional characteristics for high oleic acid soya bean oil will be provided for in the Standard, including new columns in the tables of fatty acid composition (Table 1), chemical and physical characteristics (Table 2), desmethylsterol composition (Table 3), and tocopherol and tocotrienols (Table 4).

RELEVANCE AND TIMELINESS

To facilitate international trade in food products and ingredients, Codex standards are often used as the basis for names and specifications for such products to ensure fair trade practices. Since high oleic acid soya bean oil will be utilized in increasing amounts due to its favorable characteristics, it is important for it to have consistent naming and specifications to ensure fair trade domestically and internationally. Consideration to revise CXS 210-1999 to include high oleic acid soya bean oil would require relatively little time and would make efficient use of limited CCFO resources since the major factor affected is fatty acid composition.

It is important that Codex consider new work to include high oleic acid soya bean oil in CXS 210-1999. Codex has already developed standards for oils from other enhanced oleic acid oilseed varieties (e.g., high oleic acid sunflower seed, mid-oleic acid sunflower seed, high oleic acid safflower seed), thus recognizing the need for individual standards to distinguish the oils in the marketplace. High oleic acid vegetable oils have significantly improved oxidative stability providing favorable functionality in a variety of foods as ingredients or cooking mediums. High oleic acid soya bean oil contributes significant stability to foods in which it is used as well as avoids the development of undesirable components such as trans fats by eliminating the need for chemical hydrogenation. High oleic acid soya bean oil also has lower levels of saturated fat, which many countries have identified as a food component that should be reduced in the diet. High oleic acid soya bean oil has a distinctive fatty acid profile and other characteristics that are significantly different than the soya bean oil currently listed in the standard and should be appropriately reflected as a separate commodity in the Codex standard.

MAIN ASPECTS TO BE COVERED

The proposed new work to add high oleic acid soya bean oil to CXS 210-199 will be developed according to existing procedures for Codex standards and will include, but not be limited to, the following:

- Scope
- Description
- Essential composition and quality factors
- Food additives
- Contaminants

- Hygiene
- Labeling
- Methods of analysis and sampling
- Other quality and compositional factors

ASSESSMENT AGAINST THE CRITERIA FOR THE ESTABLISHMENT OF WORK PRIORITIES

This proposal is consistent with the Criteria for the Establishment of Work Priorities applicable to both commodities and general subjects.

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

Data of the U.S. Department of Agriculture (USDA) indicate that:

- In 2019-20, world production of total oilseeds was 580.6 million metric tons.
- In 2019-20, world production of soya beans was 339.42 million metric tons.
- In 2019-20, global production of soya bean oil was 56.78 million metric tons

These data are provided to indicate the large market share of soya beans in the total global marketplace of oilseeds. New soya bean varieties whose oil contains new traits to improve health and functionality in foods are expected to gain significant market share of that currently held by traditional soya beans. High oleic acid soya bean oil is currently being favorably received in the United States and its trading partners and will likely experience considerable growth within the next several years.

Mid-oleic acid sunflower oil became commercially available in 1998. By 2005, it gradually captured a majority of the sunflower oil market in North America. High oleic acid sunflower oil similarly became available in the mid-2000s. Codex Standards for both were adopted. Because the improved functionality of mid- and high oleic acid oils is now more widely recognized than it was in the 1990s and 2000s, especially for use in frying and processed foods, it is anticipated that demand for high oleic acid soya bean oil will increase rapidly as it did for mid- and high-oleic sunflower oils.

The production and use of high oleic acid soya bean oil in the US is presented in Table 1. In 2020, high oleic acid soya beans were cultivated in 141,643 hectares and 93,375 metric tons of oil was produced (\$ 82.36 million using an average price of \$ 0.40 per pound of oil). The international trade in 2020 was 300 metric tons. In addition to the US, the high oleic acid soya beans are also cultivated in Canada, Ukraine and India. The demand for high oleic acid soya bean oil is currently greater than the supply and continues to grow in domestic and international market because of its favorable functional properties. The soya bean industry is trying to increase the supply by planting more acres of high oleic acid soya beans and it is anticipated to reach 560,000 hectares by 2023. The production and export of high oleic acid soya bean oil in 2023 is anticipated to be 364,000 metric tons and 30,000 metric tons, respectively. The international trade volume can be affected by market conditions, acreage planted, climate, demand, government programs, etc. It is estimated that 150,000 metric tons of high oleic acid soya bean oil will be produced in 2021. In 2021, at least 7,325 metric tons of high oleic acid soya beans or the extracted oil have been traded in various countries including Canada, Costa Rica, Dominican Republic, Japan (export whole beans), Mexico and South Korea. In addition, Malaysia may also be involved in its trade later this year.

Table 1. Production and use of high oleic acid soya bean oil in the United States.

Crop year	Area of cultivation (hectares)	Amount of oil produced (metric tons)	International trade (metric tons)
2019	113,314	74,700	NA ²
2020	141,463	93,375	300
2021	242,900 ¹	150,000 ¹	7,325 ³

¹Estimate; ²NA – not available due to small volume; ³Includes export of high oleic acid soya beans.

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

The proposed revision to the Codex Standard for Named Vegetable Oils (CXS 210-1999) will facilitate global trade in high oleic acid soya bean oil. Without such a standard, it is expected that national legislations will differ, which will adversely affect international trade in this product. In addition, it is expected that the lack of

a Codex standard might trigger proliferation of private standards for this oil and contribute to the confusion and deceptive practices in trade in oils that are unsuitable for their intended uses.

c) International or regional market potential.

As indicated above, a significant international and regional market potential exists, especially as global health authorities call for the use of nutritionally preferred alternatives to edible oils that are high in saturated fatty acids and also those that contain trans fats.

d) Amenability of the commodity to standardization.

This is a proposed revision to the Codex *Standard for Named Vegetable Oils* (CXS 210-1999) to include high oleic acid soya bean oil. High oleic acid soya bean oil is readily amenable to inclusion in that standard; many of its characteristics are the same as high oleic acid safflower and sunflower oils, which are already in the standard. High oleic acid soya bean oil is a well characterized material and, other than oleic acid and linolenic acid, most of its characteristics are identical to soya bean oil, a material that is already listed in the standard.

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

As indicated above, development of a Codex standard that includes high oleic acid soya bean oil will enhance consumer protection by discouraging deceptive practices and the development of private standards.

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

Not relevant.

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

None known.

RELEVANCE TO THE CODEX STRATEGIC OBJECTIVES

The proposed revision to the Codex *Standard for Named Vegetable Oils* (CXS 210-1999) is appropriate to Goal 1 (Address current, emerging and critical issues in a timely manner) of the Codex Strategic Plan 2020-2025.

As indicated in Goal 1, “Codex will need to be proactive and flexible and to respond in a timely manner to the opportunities and challenges that result.”

There are two objectives within Goal 1:

- (i) The outcome for objective 1.1 (Identify needs and emerging issues) is “Improved ability of Codex to develop standards relevant to the needs of its members,” and the indicator is “The number of emerging issues identified by subsidiary bodies”.
- (ii) The outcome for objective 1.2 (Prioritize needs and emerging issues) is “Timely Codex response to emerging issues and the needs of members,” and one of the indicators is “Proportion of identified, prioritized emerging issues that lead to proposals for new work”.

The proposed revision to CXS 210-1999 will facilitate fair trade in high oleic acid soya bean oil that otherwise, according to the commodity oil, would be inaccurately termed “soya bean oil”.

The work would also focus on essential characteristics, taking into consideration the technical and economic implications for all Codex members and in particular for developing countries, many of which are net edible oil importers.

INFORMATION ON THE RELATION BETWEEN THE PROPOSAL AND OTHER EXISTING CODEX DOCUMENTS

Codex has developed standards for many other edible fats and oils found in the following Codex standards:

- *Standard for Named Vegetable Oils* (CXS 210-1999, Adopted 1999. Revisions 2001, 2003, 2009, 2017, 2019. Amendment 2005, 2011, 2013, 2015, 2019), including products defined as high oleic acid safflower seed oil, high oleic acid sunflower seed oil, mid oleic acid sunflower seed oil.
- *Standard for Named Animal Fats* (CXS 211-1999, Adopted 1999. Amendment 2009, 2013 and 2015, 2019).
- *Standard for Olive Oils and Olive Pomace Oils* (CXS 33-1981, Adopted 1981. Revisions 1989, 2003, 2015, 2017. Amendment 2009, 2013)]

- *Standard for Edible Fats and Oils not covered by Individual Standards* (CXS 19-1981, Adopted 1981. Revisions 1987, 1999. Amendment 2009, 2013, 2015, 2017, 2019).
- *Standard for Fish Oils* (CXS 329-2017, Adopted 2017).

IDENTIFICATION OF ANY REQUIREMENT FOR AND AVAILABILITY OF EXPERT SCIENTIFIC ADVICE

None identified.

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

None identified.

PROPOSED TIMELINE FOR COMPLETION OF THE NEW WORK, INCLUDING THE START DATE, THE PROPOSED DATE FOR ADOPTION AT STEP 5/8, AND THE PROPOSED DATE FOR ADOPTION BY THE COMMISSION

It is expected that the development of this standard would be conducted in one CCFO session (effective CCFO28), depending on the agreement reached by the Committee.

PROJECT DOCUMENT**PROPOSAL FOR NEW WORK ON AMENDMENT/REVISION TO THE CODEX STANDARD FOR FISH OILS (CXS 329-2017) - INCLUSION OF CALANUS OIL****(For approval)****1. Purpose and scope of the proposed amendment**

The purpose and scope of the proposed amendment to the *Standard for Fish Oils* (CXS 329-2017) is to include calanus oil derived from the species *Calanus finmarchicus* as a named fish oil, and where relevant amend other sections of the standard to accommodate for this inclusion.

2. Relevance and timeliness

Calanus oil for human consumption has been marketed in Norway and the USA since 2012. Today, Calanus oil is exported to EU countries, USA and Canada. There is an interest for calanus oil in several countries worldwide, as for example in Asia. But exporters experience problems due to the lack of a Codex standard accommodating for calanus oil and uncertainty in importing countries on how to perform quality control and authentication of calanus oil.

The Codex *Standard for fish oils* (CXS 329-2017) was adopted in 2017. The following named fish oils are included: anchovy oil, tuna oil, krill oil, menhaden oil and salmon oil. During the discussion on CXS 329-2017 it was agreed that additional named oils may be added at a later stage as trade becomes significant and fatty acid profiles are robustly documented. Based on new commercial harvesting quotas there is a potential to produce 15,000 tonnes of calanus oil annually. Due to specific properties of calanus oil, where the main lipid class is wax ester, not all essential quality criteria for unnamed fish oils are applicable to calanus oil. Thus, there is a need to accommodate for calanus oil in CXS 329-2017 to avoid trade impediments. The distinct properties of calanus oil makes it amenable for standardisation.

Calanus oil is according to the definition for fish oils (unnamed) in CXS 329-2017 section 2.2 already covered by the standard. But this constitutes a problem for calanus oil, where the main lipid class is wax ester. Whereas the main lipid class in fish body oils and cod liver oil is triglyceride. Due to the high amount of wax esters in calanus oil, not all essential quality factors for fish oils (unnamed) in the fish oil standard are applicable calanus oil. Thus, there is a need to accommodate for calanus oil in CXS 329-2017 to avoid trade impediments. The distinct properties of calanus oil makes it amenable for standardization.

The high amount of wax esters is specific for calanus oil and clearly distinguishes it from other fish oils. There is a need to include calanus oil as a named fish oil, and to specify specific essential composition and quality factors for calanus oil, when that is justified. Wax esters can be analysed using method AOCS Ch 8-02. As the method is applicable for calanus oil, but not included in the current validation data, it is recommended that AOCS Ch 8-02 is listed as a Type IV method for calanus oil for the determination of wax esters in *Recommended Methods of Analysis and Sampling* (CXS 234-1999).

Including calanus oil as a named fish oil will reduce trade impediments and help governments in assessing the quality and the barriers and/or rejection of the product at the trade borders, and help manufacturers and traders documenting product authenticity and traceability.

Today's supply of EPA/DHA for human consumption may be as low as 30% of global demand, based on a recommended daily intake of 500 mg, according to a recent estimate (Hamilton *et al.* 2020). This gap is unlikely to be filled by traditional capture fisheries, due to a majority of stocks being considered fully exploited or overexploited. The gap may be filled by other resources, including such as krill (*Euphasia superba*) and *Calanus finmarchicus*.

The current annual trading volume of calanus oil is limited, estimated at around 25,000 kg. However, the value of calanus oil is high. The volume has been limited due to smaller R&D harvesting quotas and restricted market access. Based on the new commercial harvesting quotas issued in 2019, a potential output of 15,000 tonnes of calanus oil from may be produced. Even if only 50% of this volume is destined for human consumption, this is a high volume compared to many other fish oils already listed as named fish oils.

3. Main aspects to be covered

The proposed amendments to CXS 329-2017 include the following:

- include calanus oil as a named fish oil in Section 2.1. Description named fish oils;
- include the GLC ranges of fatty acid composition for calanus oil in Section 3.1., Table 1;
- specify additional essential compositional criteria for calanus oil in Section 3.2.;

- include calanus oil in the Section 3.3.2 Quality parameters; recommend that method AOCS Ch 8-02 is included for calanus oil as a Type IV method in *Recommended Methods of Analysis and Sampling* (CXS 234-1999), Section 8, for the analysis of wax esters.

4. Assessment against the Criteria for the establishment of work priorities

General criterion

The proposed amendment of the *Codex Standard for Fish Oils* (CXS 329-2017) for inclusion of *calanus oil* as a *named fish oil* in the list of species under Section. 2.1 could support governments and traders in assuring product authenticity, traceability, and sustainability of resources, ensuring fair practices in the food trade and taking into account the identified needs for listing of calanus oil in the standard as experienced in several countries.

Criteria applicable to commodities

a) Volume and production and value of trade

According to GOED market report the total volume of fish oils, omega-3 ingredients for human consumption was 111,210 tonnes in 2018. Both the production and global trade of fish oil is increasing. In general fish oil production is taking place in some countries and regions with specialized processing and refining industry. Finished fish oil is then traded globally to countries in all regions. The global demand is increasing, the fastest growth is especially in Asian countries.

According to GOED the volume of calanus oil is limited, 17 000 kg in 2018. In 2019 the production was approximately 25 000 kg. But the value of calanus oil is very high, compared to many other fish oils. This is due to the amount of research and development necessary at the early stages of product development. As the volume increases, pricing is expected to develop accordingly.

Both volume and value for several fish oils are listed in the table below.

Annual production and value of fish oils in 2018 (GOED market report 2019)

	Volume (tonnes)	Value (millions USD)
Common refined oils	40,754	188
Concentrated oils	20,711	485
Menhaden oil	9,405	19
Cod liver oil	8,490	45
Salmon oil	5,285	34
Tuna oil	4,531	196
Krill oil	856	102
Calanus oil	17	5

By the end of 2021, the production of calanus oil will be approximately 52 000 kg, doubling the volume from 2019. Of this volume, on average 50 % is sold in Europe (EU and Norway) and 50 % in the United States of America.

Based on the annual commercial harvesting quotas, there is a potential to produce 15 000 tonnes of calanus oil annually.

Consumption of calanus oil has been mainly as dietary supplements. Between 2008 and 2021 223 800 kg of calanus oil was manufactured and traded, resulting in the consumption of about 500 million capsules.

b) Diversification of national legislation and apparent resultant impediments to international trade

National legislation for fish oil for human consumption which accommodates for market access also for calanus oil is in place in some countries. In other regions, as for example Asia there is a lack of national legislation for calanus oil with their specific properties. Due to the high amount of wax esters, the quality parameters

established in CXS 329-2017 for named fish oils and unnamed fish oils primarily composed of glycerides of fatty acids, are not all applicable for calanus oil. Trade impediments are experienced, especially in the Asian market, due to the lack of a Codex standard accommodating for calanus oil and the uncertainty on how to control the quality and the authentication of calanus oil. Response from trading partners indicate that competent authorities in importing countries would welcome an international standard for calanus oil.

c) International or regional market potential

Based on the annual commercial harvesting quotas issued in 2019 for *Calanus finmarchicus*, the potential annual production may be 15 000 tonnes of calanus oil.

Norway exports calanus oil to EU countries, USA and Canada. There is an interest for calanus oil in several countries worldwide as for example in Asia. But market access is hindered to the lack of standardisation.

d) Amenability of the commodity to standardisation.

Calanus oils is derived from the crustacean *Calanus finmarchicus*, and according to the definition for fish oils (unnamed) in CXS 329-2017 Section 2.2 already covered by the standard. But this constitutes a problem for calanus oil, where the main lipid class is wax ester. Whereas the main lipid class in fish body oils and cod liver oil is triglyceride. Due to the high amount of wax esters in calanus oil, not all essential quality factors in the fish oil standard are applicable calanus oil. Thus, there is a need to accommodate for calanus oil in CXS 329-2017 to avoid trade impediments. The distinct properties of calanus oil makes it very amenable for standardisation.

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

Not applicable.

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

Not applicable.

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

So far, no similar work by other international organizations has been encountered.

5. Relevance to the Codex strategic objectives

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

The proposed amendment of the Codex *Standard for Fish Oils* (CXS 329-2017) responds to the need for having an updated and relevant standard for this commodity

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

The proposed amendment will simply update the existing Codex *Standard for Fish Oils* (CXS 329-2017) to include calanus oil as a named fish oil.

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

None.

8. Identification of any need for technical input to the standard so that this could be planned for

None

9. Proposed timeline for completion of the amendment.

It is expected that two sessions or less are required for the completion of the proposed amendment to the Codex *Standard for Fish Oils* (CXS 329-2017) starting from CCFO28.