

CODEX ALIMENTARIUS COMMISSION



Food and Agriculture
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Agenda Item 5.4

CRD03

JOINT FAO/WHO FOOD STANDARDS PROGRAMME

CODEX COMMITTEE ON FATS AND OILS

Twenty-Sixth Session

Kuala Lumpur, Malaysia, 25 February- 01 March 2019

PROPOSED DRAFT REVISION TO THE *STANDARD FOR NAMED VEGETABLE OILS (CXS 210-1999)*

REPORT OF THE IN SESSION WORKING GROUP

Background

1. The in-session working group (iWG) chaired by Iran and co-chaired by India met on February 25, and 26, 2019 to consider the report of the eWG and comments received contained in documents CX/FO 19/26/8 Add.1; CX/FO 19/26/8 Add.2; CRD13; CRD21. The Proposed Draft Revision to the Standard is hereby attached as Annex I.

Conclusions and Recommendations

Almond oil

The in-session working group agreed to the following changes:

2.1 Product Definition

Insertion of 'the' before the word 'kernel'.

3.1 Essential Composition and quality factors

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

- Amendment of the GLC range of the specified fatty acids as follows:

Fatty acid	Original Value	Revised Value
C16:0	4.0-13.0	4.0-9.0
C18:0	1.0-10.0	≤3.0
C18:1	43.0-75.5	62.0-76.0
C18:2	16.5-34.0	20.0-30.0

Appendix to CXS 310-1999

Table 2: Chemical and Physical characteristics of crude vegetable oil

- For consistency within the standard for named vegetable oils, replacement of the range for unsaponifiable matter with a maximum level i.e. 10-20 was replaced with ≤20

Table 3: Levels of desmethylsterols in crude vegetable oils from authentic samples as a percentage of total sterols

- Amendment of the levels of specified desmethylsterols as follows:

	Original value	Revised value
Brassicasterol	ND	ND-0.3

Campesterol	2.0-4.0	2.0-5.0
Stigmasterol	1.0-2.0	0.4-4.0
Beta-sitosterol	80.0-86.0	77.4-86.0
Delta-5-avenasterol	10.0-12.0	5.0-14.0
Delta-7-stigmastenol	1.0-2.0	ND-3.0
Delta-7-avenasterol	1.0-2.0	ND-3.0
Other	ND	ND-0.6
Total sterols (mg/kg)	2660-2800	1590-4590

- Amendment to the name of Delta-7-stigmasterol to Delta-7-stigmastenol

Table 4: Levels of tocopherols and tocotrienols in crude vegetable oils from authentic samples

- Amendment of the range for gamma-tocopherol from 5-104 to ND-104.

Recommendation

With the aforementioned changes, the iWG recommends that CCFO send the provisions regarding almond oil for inclusion in the *Standard for Named Vegetable Oils* to the Commission for adoption.

Avocado oil

The in-session working clarified the definition of Avocado oil to indicate that the oil comes from the mesocarp of the avocado fruit.

However, following the clarification of the definition it was noted that the source of existing data needed to be clarified i.e. whether it reflected oil from the mesocarp or another part of the fruit. Therefore, there was a need to review existing data to determine the source of the oil and it was noted that this may influence the definition. Furthermore it was noted that the data on avocado oil was limited, there were differing opinions on the use of broad ranges to define compositional characteristics with concerns expressed that these could lead to fraud and that thus consideration should be given to collect more data relative to the composition of avocado oil in line with the revised definition.

Recommendations

The in-session working group therefore recommends that the CCFO26

- Puts the revised definition for Avocado oil in square brackets pending a review of the data and clarifications on the origin of the oil;
- Allow more time to better define the characteristics of avocado oil and facilitate this by issuing a CL calling to new data on the characteristics of avocado oil including on the origin of the oil (part of avocado fruit from which the oil was derived)
- Establish a new electronic working group to review the data all available data and prepare a revised proposal for consideration by CCFO27.

Flaxseed (linseed) oil

The in-session working agreed to the following changes:

3.1 Essential Composition and quality factors

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

- Amendment of the GLC range for C20:1 from ND-0.6 to ND-1.2

Appendix to CXS 310-1999

Table 2: Chemical and Physical characteristics of crude vegetable oil

- For consistency of information provided for other oils the refractive index at 40°C was also included as follows: 1.472-1.475 at 40°C

- For consistency within the standard for named vegetable oils, replacement of the range for unsaponifiable matter with a maximum level i.e. 1-20 was replaced with ≤ 20

Table 4: Levels of tocopherols and tocotrienols in crude vegetable oils from authentic samples

- Amendment of the range for alpha-tocopherol from 2-20 to 2-265 and for delta-tocopherol from 3-14 to ND-14

Recommendations

With the aforementioned changes, the iWG recommends that CCFO send the provisions regarding Flaxseed (linseed) oil for inclusion in the *Standard for Named Vegetable Oils* to the Commission for adoption.

Hazelnut oil

The in-session working agreed to the following changes:

2.1 Product Definition

Insertion of 'the' before the word 'kernel'.

Appendix to CXS 310-1999

Table 3: Levels of desmethylsterols in crude vegetable oils from authentic samples as a percentage of total sterols

- Amendment of the range for campesterol from 4.0-6.2 to 3.0-6.2

Recommendation

With the aforementioned changes, the iWG recommends that CCFO send the provisions regarding Hazelnut oil for inclusion in the *Standard for Named Vegetable Oils* to the Commission for adoption.

Pistachio oil

The in-session working agreed to the following changes:

2.1 Product Definition

Insertion of 'the' before the word 'kernel'.

Appendix to CXS 310-1999

Table 2: Chemical and Physical characteristics of crude vegetable oil

- For consistency within the standard for named vegetable oils, replacement of the range for unsaponifiable matter with a maximum level i.e. 5-30 was replaced with ≤ 30

Recommendation

With the aforementioned changes, the iWG recommends that CCFO send the provisions regarding Pistachio oil for inclusion in the *Standard for Named Vegetable Oils* to the Commission for adoption.

Walnut oil

The in-session working agreed to the following changes:

2.1 Product Definition

Insertion of 'the' before the word 'kernel'.

Appendix to CXS 310-1999

Table 2: Chemical and Physical characteristics of crude vegetable oil

- For consistency within the standard for named vegetable oils, replacement of the range for unsaponifiable matter with a maximum level i.e. 2-20 was replaced with ≤ 20

With the aforementioned change, the iWG recommends that CCFO send the provisions regarding Walnut oil for inclusion in the *Standard for Named Vegetable Oils* to the Commission for adoption.

CODEX STAN 210-1999

CODEX STANDARD FOR NAMED VEGETABLE OILS
CODEX STAN 210

DESCRIPTION

Product definitions

Almond oil is derived from the kernel of almond fruit (*Amygdalus communis L.*).

[**Avocado oil** is derived from the mesocarp of the avocado fruit (*Persea americana*).]

Flaxseed (Linseed) oil is derived from the seeds of various cultivated species of *Linum usitatissimum*

Hazelnut oil is derived from the kernel of hazelnut fruit (*Corylus avellana L.*).

Pistachio oil is derived from the kernel of pistachio fruit (*Pistacia vera L.*).

Walnut oil is derived from the kernel of walnut fruit (*Juglans regia L.*).

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

Fatty acid	Almond oil	Hazelnut oil	Pistachio oil	Walnut oil	Flax/linseed oil	Avocado oil
C6:0	ND	ND	ND	ND	ND	ND
C8:0	ND	ND	ND	ND	ND	ND
C10:0	ND	ND	ND	ND	ND	ND
C12:0	ND	ND	ND	ND	ND-0.3	ND
C14:0	ND-0.1	ND-0.1	ND-0.6	ND	ND-0.2	ND-1.2
C16:0	4.0- 9.0 <u>13</u>	4.2-8.9	8.0-13.0	6.0-8.0	4.0-11.3	4.6-35.2
C16:1	0.2-0.8	ND-0.5	ND-2.0	ND-0.4	ND-0.5	ND-16.8
C17:0	ND-0.2	ND-0.1	ND-0.1	ND-0.1	ND-0.1	ND
C17:1	ND-0.2	ND-0.1	ND-0.1	ND-0.1	ND-0.1	ND-0.1
C18:0	1-10 <u>≤3.0</u>	0.8-3.2	0.5-3.5	1.0-3.0	2.0-8.0	ND-2.6
C18:1	43-75 <u>62-76</u>	74.2-86.7	50.0-70.0	14.0-23.0	9.8-36.0	31.8-80.0
C18:2	16.5-34 <u>20.0-30.0</u>	5.2-18.7	8.0-34	54.0-65.0	8.3-30.0	7.0-22.9
C18:3	ND-0.5	ND-0.6	0.1-1.0	9.0-15.4	43.8-70.0	ND-4.1
C20:0	ND-0.5	ND-0.3	ND-0.3	ND-0.3	ND-1.0	ND-0.5
C20:1	ND-0.3	ND-0.3	ND-0.6	ND-0.3	ND- 0.6 <u>1.2</u>	ND-0.5
C20:2	ND	ND	ND	ND	ND	ND
C22:0	ND-0.2	ND-0.2	ND	ND-0.2	ND-0.5	ND-0.5
C22:1	ND-0.1	ND-0.1	ND	ND	ND-1.2	ND
C22:2	ND	ND	ND	ND	ND	ND
C24:0	ND-0.2	ND	ND	ND	ND-0.3	ND-0.2
C24:1	ND	ND-0.3	ND	ND	ND	ND-0.2

ND – Non-detectable, defined as $\leq 0.05\%$

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Table 2: Chemical and physical characteristics of crude vegetable oils

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	Almond oil	Hazelnut oil	Pistachio oil	Walnut oil	Flax/linseed oil	Avocado oil
Relative density (x° C/water at 20°C)	0.911-0.929 25°C/water 25°C	0.898-0.915 20°C/water 20°C	0.915-0.920 15.5°C/water 15.5°C	0.923-0.925 25°C/water 25°C	0.925-0.935 25°C/water 25°C;	0.908-0.921 25°C/water 25°C
Apparent density (g/ml)						
Refractive index (ND 40°C)	1.468-1.475 at 20°C;	1.468-1.473 at 20°C; 1.456-1.463 at 40°C	1.467-1.470 at 25°C; 1.460-1.466 at 40°C	1.472-1.475 at 25°C; 1.469-1.471 at 40°C	1.472-1.487 at 20°C <u>1.472-1.475</u> <u>at 40°C</u>	1.465-1.474 at 20°C; 1.462-1.470 at 25°C; 1.458-1.465 at 40°C
Saponification value (mg KOH/g oil)	183-207	188-198	187-196	189-198	185-197	170-198
Iodine value	85-109	81-95	84-98	132-162	170-211	63-96
Unsaponifiable matter (g/kg)	10-20 ≤20	≤15	5-30 ≤30	2-20 ≤20	1-20 ≤20	≤19

Table 3: Levels of desmethylsterols in crude vegetable oils from authentic samples as a percentage of total sterols

	Almond oil	Hazelnut oil	Pistachio oil	Walnut oil	Flax/linseed oil	Avocado oil
Cholesterol	ND-1	ND-1.1	ND-1	ND	ND	0.0-0.5
Brassicasterol	ND <u>ND-0.3</u>	ND	ND	ND	ND-1.0	ND-0.2
Campesterol	2.0-4.0 <u>2.0-5.0</u>	4.0-6.2 <u>3.0-6.2</u>	4.0-6.5	4.0-6.5	25.0-31.0	5.0-17.2
Stigmasterol	1-2 <u>0.4-4.0</u>	ND-2.0	0.5-7.5	ND	7.0-9.0	0.3-10.0
Beta-sitosterol	80-86 <u>77.4-86</u>	76.45-96.0	75.0-94	70-92.0	45.0-53	45.0-93.4
Delta-5-avenasterol	10-12 <u>5.0-14</u>	1.0-5.1	6.0-8.0	0.5-6.0	8.0-12.0	2.0-10.0
Delta-7-stigmasterol	1-0 <u>2.0</u> <u>ND-3.0</u>	ND-4.3	ND-0.7	ND-3.0	ND	0.08-13
Delta-7-avenasterol	21-2 <u>ND-3.0</u>	ND-1.6	ND-0.5	ND-2.0	ND	0.1-4.7
Others	ND- <u>0.6</u>	ND	ND	ND	ND	ND-14.5
Total sterols (mg/kg)	2660-2800 <u>1590-4590</u>	1200-1800	1840-4500	500-1760	2300-6900	2539-6200

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Table 4: Levels of tocopherols and tocotrienols in crude vegetable oils from authentic samples

	Almond oil	Hazelnut oil	Pistachio oil	Walnut oil	Flax/linseed oil	Avocado oil
Alpha-tocopherol	20-545	100-420	10-330	ND- 170	2- 20 265	50-450
Beta-tocopherol	ND-10	6-12	ND	ND-110	ND	ND
Gamma-tocopherol	5-9 ND-104	18-194	0-100	120-400	100-712	10-20
Delta-tocopherol	ND-5.0	ND-10	ND-50	ND-60	3 ND-14	ND-10
Alpha-tocotrienol	ND	ND	ND	ND	ND	ND
Gamma-tocotrienol	ND	ND	ND	ND	ND	ND
Delta-tocotrienol	ND	ND	ND	ND	ND	ND
Total (mg/kg)	20-600	200-600	100-600	309-455	150-905	50-450