



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)**

Inclusion of Walnut oil, Almond oil, Hazelnut oil, Pistachio oil, Flaxseed oil and Avocado oil

(Prepared by the Electronic Working Group chaired by Iran and co-chaired by India)

(At Step 3)

Codex members and observers are invited to submit comments on **the proposed draft revision to the standard as presented in the Appendix**, at Step 3, by **15 January 2019**

Comments should be submitted through the Codex Online Commenting System (OCS): <https://ocs.codexalimentarius.org/> as stipulated in [CL 2018/79/OCS – CCFO](#).

INTRODUCTION

1. At CCFO23 (2013), the committee agreed to the scope of the discussion paper to cover walnut oil, almond oil, hazelnut oil, pistachio oil, flaxseed oil and avocado oil. According to the decision of CCFO23, and taking into account the comments made at CCFO24, the EWG revised the discussion paper including a draft project document, for consideration at CCFO25. Using the data from countries and information obtained from other sources, Iran prepared a revised discussion paper on walnut oil, almond oil, hazelnut oil, pistachio oil, flaxseed oil and avocado oil for consideration by CCFO25.
2. At CCFO25 (2017) the committee agreed to start new work on the revision to the standard for named vegetable oils (CXS 210-1999) to include: walnut oil, almond oil, hazelnut oil, pistachio oil, flaxseed oil and avocado oil in. The committee further agreed establishes an Electronic Working Group (EWG) chaired by Iran and co-chaired by India.

PARTICIPATION AND METHODOLOGY

3. CCFO 25 (Kuala Lumpur, Malaysia, 2017) agreed to establish an Electronic Working Group (EWG) chaired by Iran and co-chaired by India, in cooperation with the members of the electronic working group. The following 16 members and one observer participated in the EWG: Argentina, Brazil, Canada, Colombia, Egypt, France, Italy, Korea, Mexico, Philippines, Poland, Turkey, UAE, USA, The EU Vegetable Oil and Proteinmeal Industry Federation (FEDIOL).
4. The following process was followed by the EWG
 - a. The initial and preliminary request for data on the proposed draft revision to the standard for named vegetable oils (CXS 210-1999) in relation to inclusion of: walnut oil, almond oil, hazelnut oil, pistachio oil, flaxseed oil and avocado oil was sent out to the EWG members on Dec 13, 2017. The requested data related to the fatty acid, sterols, tocopherols composition and content and physicochemical properties.
 - b. The data, comments and suggestion received from EWG members was applied and the revised proposal was circulated to the EWG members on 31 May 2018.
 - c. The second draft was revised and was sent to the EWG members for comments on Aug 20, 2018.
 - d. Revision of the proposed draft based on the comments received from the EWG members and the final revision draft was sent on Sep 30 2018.

CONCLUSIONS

5. At the three steps mentioned above, based on the data were received from EWG members, results from the analysed local samples, and also data collected from scientific sources (papers and books), data on the fatty acid, sterols, tocopherols composition and content and physicochemical properties were completed. It should be mentioned that all the comments received from the EWG members have been considered in the final version as much as possible, however, if there were any further changes it can be discussed in the session.

RECOMMENDATION

6. CCFO26 is requested to consider the proposed the proposed draft revision as presented in ANNEX 1.

ANNEX I**PROPOSED DRAFT REVISION TO THE STANDARD FOR NAMED VEGETABLE OILS
(CXS 210-1999)****Inclusion of Walnut oil, Almond oil, Hazelnut oil, Pistachio oil, Flaxseed oil and Avocado oil**

(At Step 3)

2. DESCRIPTION**2.1 Product definitions**

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

Avocado oil is derived from avocado fruit (*Persea americana*).

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

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

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

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

3.1 ESSENTIAL COMPOSITION AND QUALITY FACTORS

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

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	4.0-13.0	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-0.4	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	1.0-10.0	0.8-3.2	0.5-3.5	1.0-3.0	2.0-8.0	ND-2.6
C18:1	43.0-75.5	74.2-86.7	50.0-70.0	14.0-23.0	9.8-36.0	31.8-80.0
C18:2	16.5-34.0	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	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 $\leq 0.05\%$

APPENDIX TO CXS 310-1999**3. CHEMICAL AND PHYSICAL CHARACTERISTICS****Table 2: Chemical and physical characteristics of crude vegetable oils**

	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 25°C/water 25°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)	1.468-1.475	1.468-1.473	1.467-1.470	1.472-1.475	1.472-1.487	1.465-1.474
Refractive index(ND 40°C)	at 25°C; 1.462-1.466 at 40°C	at 25°C; 1.456-1.463 at 40°C	at 25°C; 1.460-1.466 at 40°C	at 25°C; 1.469-1.471 at 40°C	at 20°C	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	≤15	5-30	2-20	1-20	≤19

4. IDENTITY CHARACTERISTICS

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	ND	ND	ND	ND-1.0	ND-0.2
Campesterol	2.0-4.0	4.0-6.2	4.0-6.5	4.0-6.5	25.0-31.0	5.0-17.2
Stigmasterol	1.0-2.0	ND-2.0	0.5-7.5	ND	7.0-9.0	0.3-10.0
Beta-sitosterol	80.0-86	76.45-96.0	75.0 -94	70-92.0	45.0-53	45.0-93.4
Delta-5-avenasterol	10.0-12.0	1.0-5.1	6.0-8.0	0.5-6.0	8.0-12.0	2.0-10.0
Delta-7-stigmasterol	1.0-2.0	ND-4.3	ND-0.7	ND-3.0	ND	0.08-13
Delta-7-avenasterol	1.0-2.0	ND-1.6	ND-0.5	ND-2.0	ND	0.1-4.7
Others	ND	ND	ND	ND	ND	ND-14.5
Total sterols (mg/kg)	2660-2800	1200-1800	1840-4500	500-1760	2300-6900	2539-6200

4. IDENTITY CHARACTERISTICS

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	50-450
Beta-tocopherol	ND-10	6-12	ND	ND-110	ND	ND
Gamma-tocopherol	5-104	18-194	0-100	120-400	100-712	10-20
Delta-tocopherol	ND-5.0	ND-10	ND-50	ND-60	3-14	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

LIST OF PARTICIPANTS

Depending on the length of the EWG report, the Secretariat may decide to hyperlink the list of participants.

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