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CODEX COMMITTEE ON FATS AND OILS

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PROPOSED DRAFT AMENDMENT/REVISION TO THE STANDARD FOR NAMED VEGETABLE OILS (CXS 210-1999): Inclusion of Avocado oil

(Step 3)

(Prepared by the Electronic Working Group chaired by Mexico and co-chaired by the United States of America)¹

Codex Members and Observers wishing to submit comments, at Step 3, on this proposed draft should do so as instructed in [CL 2021/28/OCS-FO](#) available on the Codex webpage/Circular Letters 2021: <http://www.fao.org/fao-who-codexalimentarius/resources/circular-letters/en/>

INTRODUCTION

1. At the 26th Session of the Codex Committee for Oils and Fats (CCFO26), held from February 25 to March 1, 2019 in Kuala Lumpur, Malaysia, the Committee agreed to initiate new work to amend the *Standard for Named Vegetable Oils (CXS 210 1999)* to include the specification for avocado oil.
2. The CCFO26 agreed to establish an EWG, chaired by Mexico and Co-chaired by the USA, working in English only, to:
 - i. Review all available data on the characteristics and origins of avocado oil with a view to revising the provisions for avocado oil; and
 - ii. Prepare a report of the EWG to be submitted to the Codex Secretariat, at least 3 months in advance of CCFO27 for circulation for comments at Step 3.
3. CCFO26 also requested the Codex Secretariat to issue a CL calling for submission of data on the characteristics and origin of avocado oil (part of the fruit from which the oil was derived).

PARTICIPATION AND METHODOLOGY

4. To undertake the task outlined above, Mexico prepared an initial Circular Letter (CL) to collect available information on: i) the identity of the parameters of avocado oil: fatty acid profile, physical-chemical characteristics, and sterol profile; ii) the definition of avocado oil, in relation to whether avocado oil is obtained from the mesocarp or from the whole fruit. The CL also placed special emphasis on: the source of the information, the statistics and parameters shared by the Codex member countries come from scientific sources, from recognized laboratories accredited by ISO standards, as well as from producers whose data were obtained from accredited laboratories and using the methods of analysis of the profile of fatty acids and levels of desmethyl sterols, accredited by the accreditation body of each country.
5. The CL was circulated by Codex Secretariat during July to November 2019; to which eight countries² and one observer organisation submitted information as requested.
6. The kick-off message calling for registration of both members and observers to participate in the EWG was issued in July 2019. Twenty (20) members and two (2) observers registered to participate in the EWG. The EWG undertook its work through the Codex online platform.

¹ Australia, Brazil, Canada, Colombia, Ecuador, Egypt, India, Iran, Italy, Malaysia, Mexico, Netherlands, New Zealand, Peru, Republic of Korea, Rwanda, Sierra Leone, Thailand, UK, USA, ICGMA and FEDIOL.

² Canada, China, Chile, Ecuador, Greece, Mexico; New Zealand, USA, and FEDIOL.

ANALYSIS OF RESPONSES

7. The responses to the CL were technically analysed by the EWG, with the focus that the proposed parameters define a 100% pure avocado oil, while promoting an inclusive proposal that considers the characteristics of avocado oil produced in the various regions of the world.

8. During the analysis priority was given to: information received from avocado oil producing countries, data from scientific sources, and data endorsed by certified laboratories over data obtained from samples acquired in supermarkets, which could reflect the problem of adulteration that is intended to be avoided as much as possible.

9. In this context, the EWG considered that certain fatty acid values are critical to define the identity of avocado oil. Similarly, the parameters of the sterols were adjusted with the opinions received from the Codex member countries to guarantee the authenticity of the avocado oil.

10. With this analysis methodology and with the goal of reaching a proposal that guarantees 100% pure avocado oil (thus avoiding adulteration) and that, at the same time, includes avocado oil produced in all regions of the world, the EWG prepared three drafts that were sent for consultation among Codex members in March/June 2020; July/December 2020 and March/May 2021, respectively.

11. The first draft received comments from Canada, Peru, Iran, and the United States. The second draft received a response from New Zealand, the United States, Canada and FEDIOL. And the third draft received input from Canada, the United States, New Zealand and FEDIOL.

12. Following the rescheduling of CCFO27 due to the Covid19 pandemic, the consultation periods were extended, the EWG decided to analyse each and every response received from the Codex member countries, regardless of whether the comments arrived after the deadline established in the Circular and in the drafts. As a consequence, the EWG proposal was adapted to include the suggestions of all countries but without compromising the identity of the avocado oil.

13. One issue that was commented on, during the final stage of this consultation and analysis process, was that of the values (or provisions) for tocopherols. Tocopherols are considered an identity and quality characteristic, as with desmethylsterols, in CXS 210-1999 (albeit, under section of 'Other Quality and Composition Factors'). The EWG forum was unable to receive sufficient information to arrive on a conclusion on the values of tocopherols for avocado oil. On the contrary, in the case of the profile of fatty acids and desmethylsterols, there is already a historical record of information of more than 10 years, which allows having better reference values for the analysis. It is expected that cultivar, season, growing location, and processing would impact the ranges and profile of tocopherols.

14. In this context, the EWG proposes to the CCFO that tocopherol values should be reviewed within a time period found to be acceptable to the Committee, to allow the different Codex member countries and observers to generate and collect the necessary data in order to obtain reference values that strengthen the identity and quality specifications of avocado oil.

15. The objective of this EWG was to establish a draft provision for avocado oil, and the data collected from the member countries allowed this EWG to work on a proposal that includes the different qualities of avocado oil. However, it is important to further collect more information to see how the peel and seed of the whole fruit can affect the parameters of fatty acid profile (FAP), desmethylsterols and tocopherols in contrast to oil derived from the mesocarp only. The oil is generally considered virgin avocado oil when it is obtained by using only the mesocarp and from fruit with certain characteristics.

16. The EWG chair and co-chair are open to having one-to-one informal meetings with all interested countries, prior to the date of the CCFO27 in the interest of advancing the inclusion of the parameters proposed for avocado oil in the Standard for Named Vegetable Oils.

CONCLUSIONS AND RECOMMENDATIONS

17. The EWG requests CCFO27, to consider advancing as currently drafted, the proposed draft provision for Avocado oil for inclusion in the Codex *Standard for Named Vegetable Oils* (CXS 210-1999) as presented in the Annex (Part I and Part II) to this report.

18. CCFO27 is also requested to consider the outstanding issues as outlined in the paragraphs 19, and 20 below.

19. The proposed draft provision includes a new parameter, "Clerosterol", which does not exist in the current standard (CXS 210-1999) but its inclusion was requested by members of the EWG during the consultation process. CCFO27 is requested to consider which one of the following three option would be best suited for its inclusion into the standard:

Option 1: Insert the new parameter for "Clerosterol", in Table 3, as proposed in the Annex.

Option 2: Insert the new parameter for “Clerosterol”, to the category “Others” in Table 3, and amend ‘Others’ to reflect this addition.

Option 3: Insert the new parameter for “Clerosterol”, as a footnote to Table 3 to present the ‘clerosterol’ value.

20. To cover the other relevant issues that include aspects of quality, not identity, such as the raw material used (mesocarp or whole fruit) and the process of obtaining avocado oil (raw, Virgin or extra Virgin), it is suggested the consideration of a new work by CCFO: the elaboration of a standard for Virgin avocado oil, with its own definition of the product.

ANNEX

**PROPOSED DRAFT AMENDMENT/REVISION TO THE STANDARD FOR NAMED VEGETABLE OILS
(CXS 210-1999): Inclusion of Avocado oil**

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Proposed changes to relevant sections are indicated in **bold** and underline

PART I

2. DESCRIPTION

2.1 Product definitions

Avocado oil is derived from the mesocarp of the avocado fruit (*Persea americana*) and can be obtained by processing the whole fruit or just the mesocarp.

3. ESSENTIAL COMPOSITION AND QUALITY FACTORS

3.1 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	<u>Avocado Oil</u>
<u>C6:0</u>	=
<u>C8:0</u>	=
<u>C10:0</u>	=
<u>C12:0</u>	=
<u>C14:0</u>	<u>ND - 0.3</u>
<u>C16:0</u>	<u>11.0 - 24.0</u>
<u>C16:1</u>	<u>4.0 - 12.0</u>
<u>C17:0</u>	<u>ND - 0.3</u>
<u>C17:1</u>	<u>ND - 0.12</u>
<u>C18:0</u>	<u>0.1 - 1.3</u>
<u>C18:1</u>	<u>53.0 - 70.0</u>
<u>C18:2</u>	<u>7.8 - 19.0</u>
<u>C18:3</u>	<u>ND - 2.1</u>
<u>C20:0</u>	<u>ND - 0.3</u>
<u>C20:1</u>	<u>ND - 0.3</u>
<u>C20:2</u>	=
<u>C22:0</u>	<u>ND - 0.5</u>
<u>C22:1</u>	=
<u>C22:2</u>	=
<u>C24:0</u>	<u>ND - 0.2</u>
<u>C24:1</u>	<u>ND - 0.2</u>

PART II**APPENDIX****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	<u>Avocado Oil</u>
<u>Relative density (x°C/water at 20°C)</u>	<u>0.910 - 0.920</u>
<u>Apparent density (g/ml)</u>	<u>0.908 - 0.915</u>
<u>Refractive Index (ND 40°C)</u>	<u>1.460 - 1.470</u>
<u>Saponification Value (mg KOH/g oil)</u>	<u>170 - 198</u>
<u>Iodine Value</u>	<u>80 - 90</u>
<u>Unsaponifiable matter (g/Kg)</u>	<u>19.0 max</u>

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.

	<u>Avocado Oil</u>
<u>Cholesterol</u>	<u>ND - 0.5</u>
<u>Brassicasterol</u>	<u>ND - 0.2</u>
<u>Campesterol</u>	<u>4.0 - 8.3</u>
<u>Stigmasterol</u>	<u>ND - 2.0</u>
<u>Beta-sitosterol</u>	<u>79.0 - 93.4</u>
<u>Clerosterol</u>	<u>1.0 - 2.0</u>
<u>Delta-5-avenasterol</u>	<u>2.0 - 8.0</u>
<u>Delta-7-stigmasterol</u>	<u>ND - 1.0</u>
<u>Delta-7-avenasterol</u>	<u>ND - 1.0</u>
<u>Others</u>	<u>0.0 - 2.0</u>
<u>Total sterols (mg/kg)</u>	<u>3500 - 6500</u>