CODEX ALIMENTARIUS COMMISSION

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World Health Organization

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Agenda Item 11 **CX/FO 19/26/14**

JOINT FAO/WHO FOOD STANDARDS PROGRAMME

CODEX COMMITTEE ON FATS AND OILS

Twenty-Sixth Session

Kuala Lumpur, Malaysia, 25 February- 01 March 2019

DISCUSSION PAPER ON AMENDING THE STANDARD FOR NAMED VEGETABLE OILS (CXS 210-1999) TO CONSIDER THE APPLICABILITY OF THE FATTY ACID COMPOSITION OF OTHER OILS LISTED IN TABLE 1 IN RELATION TO THEIR CORRESPONDING CRUDE FORM

(Prepared by Electronic Working Group Chaired by United States, assisted by AOCS)

Background

1. At the 25th Session of Codex Committee on Fats and Oils (CCFO25), held in Kuala Lumpur, Malaysia, the Committee agreed to establish an electronic working group (EWG) to consider the applicability of the fatty acid composition of all oils in Table 1 of the Codex Standard for Named Vegetable Oils (CXS 210-1999) in relation to their corresponding crude forms. An EWG was established, chaired by the USA, with the assistance of AOCS, working in English only, to prepare a discussion paper on this topic.

2. The EWG began by sending an invitation for participated to join the EWG on June 14, 2017, and continued work via the Codex forum on August 28, 2018. Twenty two members[1] participated in the EWG via the forum. The round 1 draft document was emailed to members on December 22, 2017, the round 2 document was posted on the electronic forum on March 12, 2018, and the round 3 document was posted on the electronic forum on August 28, 2018.

Issues

3. The discussion on this topic at CCFO25[2] came about after considering a discussion paper from India that proposed new work to introduce a "Note" in the Codex Standard for Named Vegetable Oils (CXS 210-1999) to indicate that the fatty acid composition for rice bran oil in Table 1 is also applicable to crude rice bran oil. After considerable discussion, the Committee agreed to include the following text in Section 2 of the Appendix for Standard for Named Vegetable Oils "For the fatty acid range of crude rice bran oil not intended for direct human consumption the ranges as given for rice bran oil in Table 1 apply."

4. The Committee agreed that the inclusion of the "Note" on the applicability of the fatty acid composition of rice bran oil to the crude form of the oil was not intended to broaden the scope of the Standard for Named Vegetable Oils but provide clarity in the trade of crude rice bran oil.

5. During the discussion, the Committee was informed that CCFO16[3] "noted that in general there was no significant difference between the GLC ranges of crude and refined oils, and agreed to retain the current title at this stage, while noting that this question could be further considered at a later date." (ALINORM 99/17, para. 42)

Results

6. The table below presents results from peer-reviewed journals illustrating that the fatty acid composition of crude vegetable oils is nearly identical to their corresponding refined counterparts. Though the fatty acid composition of the crude vegetable oils and their corresponding refined counterparts are nearly identical, it should be noted that during refining, the deodorization step may result in isomerization of some natural cis bonds to trans bonds (0.6 to 2.97 %, as noted by Costa et al, 2011, Van Hoed et al, 2006, and Cmolik et al, 2000) and the

[1] Argentina, Brazil, Canada, Columbia, Ecuador, European Union, France, Gambia, Germany, India, Israel, Malaysia, Mexico, Russian Federation, South Africa, Spain, Thailand, Turkey, United Kingdom, United States, FEDIOL, AOCS,

[2] REP17/FO-Rev. Page 76-83

[3] ALINORM 99/17, Page 38-43

presence of trans isomers in refined vegetable oils that are generally not found or found at very low levels in crude vegetable oils.

Conclusion and Recommendation

7. Therefore, to provide clarity in the trade of crude vegetable oils, we propose that a new footnote (i.e. footnote 3) be added to the title of Table 1, in Section 3.1 GLC ranges of fatty acid composition (expressed as percentages), as Indicated in **Appendix I.** The proposed new footnote would read as follows:

8. Footnote 3: The fatty acid values in this table apply to the vegetable oils described in Section 2.1 presented in a state for human consumption as well as in the crude unrefined form, if applicable. Though the fatty acid composition of the crude oils and their corresponding refined counterparts are nearly identical, the refining process may result in formation of some trans isomers in refined vegetable oils that are generally not found or found at very low levels in crude vegetable oils.

TABLE

Vegetable Oil	**Refining Processes**	**Major Fatty Acids in Crude Oil**		**Major Fatty Acids in Refined Oil**		**Reference**
Soybean Oil	Degummed, alkali refined, bleached, deodorized	Palmitic Oleic Linoleic Linolenic	10.8% 25.0 52.3 6.7	Palmitic Oleic Linoleic Linolenic	11.1% 24.9 53.0 5.0	Costa et al, 2011, Eur J Lipid Sci 113:528-535.
Rice Bran Oil	Alkali refined, bleached, dewaxed, deodorized	Palmitic Oleic Linoleic Linolenic	19.8 42.7 32.4 1.4	Palmitic Oleic Linoleic Linolenic	19.8 42.9 31.7 1.4	Van Hoed et al, 2006, J Am Oil Chem Soc 83:315-321.
Rice Bran Oil	Degummed, alkali refined, bleached, deodorized	Palmitic Oleic Linoleic Linolenic	21.2 42.4 30.2 0.7	Palmitic Oleic Linoleic Linolenic	19.3 41.6 30.3 0.7	Mezouari et al, 2007, Eur J Lipid Sci Technol 109:198-205.
Sunflowerseed Oil	Degummed, alkali refined, bleached, deodorized, dewaxed	Palmitic Oleic Linoleic Linolenic	NR 51.9 43.3 NR	Palmitic Oleic Linoleic Linolenic	NR 52.3 43.5 NR	Pat et al, 2015m J Food Sci Technol 52:4613-4618.
Rapeseed/ Canola Oil	Degummed, alkali refined, bleached, deodorized	Palmitic Oleic Linoleic Linolenic	NR 56.7 20.2 7.6	Palmitic Oleic Linoleic Linolenic	NR 56.6 20.0 5.1	Cmolik et al, 2000, Eur J Lipid Sci Technol 2000:5-22.
Hazelnut Oil	Alkali refined, bleached, deodorized	Palmitic Oleic Linoleic Linolenic	5.2 81.1 10.7 NR	Palmitic Oleic Linoleic Linolenic	5.3 81.0 10.6 NR	Karabulut et al, 2005, Eur J Lipid Sci Technol 107:476-480
Palm Oil	Degummed, steam or alkali refined, bleached, deodorized	Palmitic Oleic Linoleic Linolenic	44.1 39.5 9.7 0.3	Palmitic Oleic Linoleic Linolenic	43.9 39.7 9.8 0.2	Ramli et al, 2017, J Sci Food Agric DOI: 10.1002.jsfa.8839

NR, not reported

APPENDIX I

PROPOSED AMENDMENT TO THE STANDARD FOR NAMED VEGETABLE OILS (CXS 210-1999) TO CONSIDER THE APPLICABILITY OF THE FATTY ACID COMPOSITION OF OTHER OILS LISTED IN TABLE 1 IN RELATION TO THEIR CORRESPONDING CRUDE FORM

Proposed amendment is indicated as underlined.

3. 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 1 (expressed as percentage of total fatty acids)[3] (see Section 3.1 of the Standard)

[3]The fatty acid values in this table apply to the vegetable oils described in Section 2.1 presented in a state for human consumption as well as in the crude unrefined form, if applicable. Though the fatty acid composition of the crude oils and their corresponding refined counterparts are nearly identical, the refining process may result in formation of some trans isomers in refined vegetable oils that are generally not found or found at very low levels in crude vegetable oils.