

CODEX ALIMENTARIUS COMMISSION



Food and Agriculture
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Viale delle Terme di Caracalla, 00153 Rome, Italy - Tel: (+39) 06 57051 - E-mail: codex@fao.org - www.codexalimentarius.org

Agenda Item 10

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COMMENTS ON DISCUSSION PAPER ON THE REVISION OF LIMITS OF OLEIC AND LINOLEIC ACIDS IN SUNFLOWERSEED OILS IN THE *STANDARD FOR NAMED VEGETABLE OILS* (CODEX STAN 210-1999)

(Comments of Brazil, Egypt, European Union, India and Russia)

BRAZIL

General Comments

Scientific literature has demonstrated that the fatty acid composition of sunflowerseed oil is influenced by environmental conditions, especially temperature. The influence of temperature can be confirmed by studies such as Lajara *et al.* (1990) and Salera & Baldini (1998).

Recent researches (Sukkasem *et al.*, 2013; Grunvald *et al.*, 2013; Izquierdo *et al.*, 2002) show that in countries located between 23°N and 23°S, where the minimum temperature is naturally higher than in European countries, the conventional sunflower oil produced contains higher amounts of oleic acid.

The effect of temperature increase in the amount of oleic and linoleic acid has been related to the decrease of activity of the oleate desaturase enzyme, responsible for the conversion of oleic acid into linoleic, resulting in the increase of the oleic acid in the oil (Flagella *et al.*, 2002).

The increase of sunflower cultivation to mild climate territories of Argentina, Tanzania, South Africa, India, Myanmar (FAOSTAT, 2012), as well as the expansion of its cultivation to others subtropical and tropical regions are resulting in sunflowerseed oil with fatty composition which are out of limits established in the Codex Stan 210-1999.

Although Brazil does not export sunflower oil, the production of sunflower crude oil in Brazil is around 63,4 ton and imports of this type of oil is around 28,4 ton (IBGE/LSPA, 2014). Of the total amount of crude oil (92 ton), 80% is refined for human consumption.

To contribute with this discussion Brazil presents data from 8 different producers, most of them located in the central west part of Brazil, in a total of 485 results. In the excel file attached, Brazil presents the results regarding fatty acid composition and area of production. In general we can observe the same situation reported by Argentina regarding oleic and linoleic acid behavior (ASAGA, 2003). Other small differences in specific minority fatty acids can be observed comparing the data and the current Codex Standard ranges.

In this way, Brazil considers that there is enough scientific evidence to support the review of the ranges of oleic and linoleic acids values and related quality composition factors of sunflower oil in order to accommodate variability of sunflower oils currently traded worldwide.

It is important to highlight that similar situations have been faced by CCFO in the new works recently approved regarding revision of the standards of olive oil and peanut oil.

Specific Comments

Brazil presents results of 485 samples of sunflower oil (conventional seeds) produced in geographical area that is quite similar to that reported by Argentina.

In general we can observe the same behavior of C18:1 (oleic acid) and C18:2 (linoleic acid), increase of the first and decrease of the second. Other small differences in the minority fatty acids: C16:0 (palmitic acid), C18:0 (stearic acid); C18:3 (linolenic acid), C20:0 (arachidic acid), C20:1 (gadoleic acid), C22:0 (behenic acid) and C24:0 (lignoceric acid) were also observed.

In the excel file attached we present all the results regarding fatty acid composition and area of production and, considering the approach of mean \pm 3 standard deviation adopted by CCFO to amend the level of desmethylsterols and fatty acid composition of rice bran oil in Codex Stan 210-1999 (REP13/FO, §§ 86-89). The resume of the data is presented below:

Fatty acid	Current values (Codex Stan 210-1999)	Brazilian data (average \pm 3SD)
C16:0	5,0 - 7,6	3,3 - 6,7
C18:0	2,7 - 6,5	2,5 - 4,4
C18:1	14,0 - 39,4	14,0 - 55,9
C18:2	48,3 - 74,0	35,8 - 74,0
C18:3	ND - 0,3	ND - 0,4
C20:0	0,1 - 0,5	ND - 0,5
C20:1	ND - 0,3	ND - 0,4
C22:0	0,3 - 1,5	ND - 1,6
C24:0	ND - 0,5	ND - 1,1

References:

ASAGA R&D. Composición de ácidos grasos del aceite de girasol obtenido de semillas certificadas sembradas en distintas zonas de la República Argentina – Cosecha 2001-2002. *Revista Aceites y Grasas*, 52:430-437, 2003.

FAOSTAT. Food and Agricultural commodities production – Top production of sunflower seed, 2012, available in <http://faostat.fao.org/site/339/default.aspx>.

Flagella, Z. *et al.* Changes in seed yield and oil fatty acid composition of high oleic sunflower (*Helianthus annuus* L.) hybrids in relation to the sowing date and the water regime. *European Journal of Agronomy*, Amsterdam, v. 17, n. 03, p. 221–230, 2002.

Grunvald AK *et al.* Influence of Temperature on the Fatty Acid Composition of the Oil From Sunflower Genotypes Grown in Tropical Regions. *Journal of the American Oil Chemists' Society*, 90(4):545-553, 2013.

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Izquierdo NG, Aguirrezabal AN, Andrade F, Pereyra V. Night temperature affects fatty acid composition in sunflower oil depending on the hybrid and the phenological stage. *Field Crop Res*, 77:115-126, 2002.

Lajara JR, Diaz U, Quidiello RD. Definite influence of location and climatic conditions on the fatty acid composition of sunflower seed oil. *Journal of the American Oil Chemists' Society* 67(10): 618-623, 1990.

Salera E, Baldini M. Performance of high and low oleic acid hybrids of sunflower under different environmental conditions. *Helia* 21(28):55-68, 1998.

Sukkasem C, Laosuwan P, Wonprasaid S, Machikowa T. Effects of environmental conditions on oleic acid of sunflower seeds. *International Journal of Chemical, Environmental & Biological Sciences* 1(2):4087, 2013.

EGYPT

Egypt agrees with proposal and scope and it supports the new work from the CAC at its 34th session.

EUROPEN UNION

The European Union and its Member States (EUMS) would like to thank Argentina for leading the work on the revision of the discussion paper.

The EUMS acknowledge the data presented by Argentina and Brazil suggesting that in some cases sunflower seed oil produced in warmer climatic conditions may exceed the limits set in Codex Stan 210 for oleic acid. However, there are also data demonstrating that sunflower oil produced in exceptionally warm conditions fits within the range set in the standard. Therefore, the EUMS see no urgent need to revise the current oleic and linoleic acid ranges for traditional sunflower seed oils. The EUMS are also concerned that the proposed revision could compromise the identity and authenticity of the traditional oils and obscure the distinction between traditional and mid oleic sunflower oils.

For the above reasons, the EUMS do not support the new work as proposed in Appendix I of document CX/FO 17/25/10.

INDIA

General Comment:

India supports the proposal for revision the limits of Oleic and Linoleic Acids in sunflowerseed Oils in the Codex Stan 210-1999.

RUSSIA

General comments:

- 1) Sunflowerseed oil (in particular its traditional (“conventional”) type indicated in CODEX STAN 210 as “Sunflower seed oil”) was for the first time grown on territories with temperate climate. Traditional fatty acid composition implies connection with the region of production climate characteristics of which determine high level of PUFA.
- 2) The proposed changes of fatty acid composition of “conventional” sunflowerseed oil will lead to significant difficulties with identification in international trade, wherein Russia supports FOSFA opinion.
- 3) Based on the above stated, in order to find a compromise, Russia considers it possible to discuss the issue of changing of fatty acid characteristics of sunflowerseed oil relating to “mid-oleic oil”.

With this proposal we do not have any doubts that sunflower grown in Argentina is the product of traditional selection, but we consider that in this case the differentiation of different types of oil depending on agroclimatic conditions of growing can be elaborated. We once again emphasize that “conventional” type is connected in particular to the climate of its initial production – temperate climate of Russia’s and Ukraine’s chernozemic region.

Thus our position is the following:

The Russian Federation proposes to leave the limits of oleic and linoleic acids for the categories of sunflower oil covered in the Codex Stan 210-1999 as they are:

Fatty acid	Current standard of Sunflower-seed oil
C18:1	14,0 – 39,4
C18:2	48,3 – 74,0

It is also proposed to consider the possibility to attribute oil produced from sunflower seeds with fatty acid composition proposed by Argentina to mid oleic sunflower seed oil.

The classification presented in the Codex Stan 210-1999 clearly distinguishes types of oil, whereas the proposal of Argentina to change current oleic and linoleic ranges will diminish the difference between three types and this will impede their identification during trade. It is also necessary to mention that the absence of identification characteristics for traditional for Russia sunflower seed oil will have negative impact on domestic fat-and-oil industry that is building up its export potential during last years.