



## Agenda Item 9

CX/FO 11/22/11

### JOINT FAO/WHO FOOD STANDARDS PROGRAMME CODEX COMMITTEE ON FATS AND OILS

Twenty-second Session  
Penang, Malaysia, 21-25 February 2011

#### OTHER BUSINESS AND FUTURE WORK

#### DISCUSSION PAPER ON A PROPOSAL TO REVISE THE LIMIT FOR CAMPESTEROL IN THE CODEX STANDARD FOR OLIVE OILS AND OLIVE POMACE OILS (CODEX-STAN33-1981)

(prepared by Australia)

Australia, as a strong advocate for the maintenance of the integrity and quality of olive oils in world trade, presents the following discussion paper in support of its proposal that the Codex Committee on Fats and Oils (CCFO) initiate new work to review the limit for campesterol (and consequential changes to the limit for stigmastanol) in the Codex *Standard for Olive Oils and Olive Pomace Oils* (CODEX STAN 33-1981) (the Codex standard) so as to establish a revised limit that is truly representative of global variability in this parameter in virgin olive oils.

It is noted that the General Principles of the Codex Alimentarius Commission require that Codex Committees revise standards when new scientific or other relevant information is available.<sup>1</sup> Since new data on the global variability in campesterol levels in virgin olive oils has continued to become available since the adoption of the revised Codex standard in 2003, Australia contends that CCFO should undertake new work to review the limit for campesterol in the Codex standard to ensure compliance with the General Principles.

Australia recommends this work be conducted in conjunction with new work proposed by Syria on the limit for  $\Delta^7$ -stigmastanol in the Codex standard because of the similarity of the issues involved.

The Codex Alimentarius Commission Strategic Plan 2008-2013, in establishing its goal of Promoting Sound Regulatory Frameworks, recognises the need for Codex commodity standards to reflect global variations and focus on essential characteristics and to take into consideration the technical and economic implications for all members:

*Activity 1.2 Review and develop Codex standards and related texts for food quality, taking into account scientific and technological developments, to ensure that they are generic in nature and whilst maintaining inclusiveness, reflect global variations and focus on essential characteristics so as to avoid being overly prescriptive and not more trade restrictive than necessary, while respecting the basic objectives of the CAC, taking into consideration the technical and economic implications for all members as well as the special needs of developing countries including infrastructure, resources and technical and legal capabilities.”<sup>2</sup>*

It is widely understood that the Codex standard falls short of these objectives. Many of its compositional limits do not adequately reflect global variations in this commodity and, as a consequence, it fails to accommodate many authentic high quality olive oils from around the world. The International Olive Council (IOC), for example, has noted that exceptions to established limits occur in numerous parameters (CX/FO 07/20/7). Ongoing work in the CCFO attempting to define a suitable range for linolenic acid in

<sup>1</sup> *Codex Procedural Manual*, 19<sup>th</sup> Ed., page 17: “The Codex Alimentarius Commission and its subsidiary bodies are committed to revision as necessary of Codex standards and related texts to ensure that they are consistent with and reflect current scientific knowledge and other relevant information. [...] Each member of the Codex Alimentarius Commission is responsible for identifying, and presenting to the appropriate committee, any new scientific and other relevant information which may warrant revision of any existing Codex standards or related texts.”

<sup>2</sup> Goal 1 Activity 1.2 *Codex Alimentarius Commission Strategic Plan 2008–2013*.

olive oils further demonstrates that point, as do recent cases where trade in authentic olive oils has been disrupted by application of composition and quality regulations similar to those in the Codex standard.

To ensure that the Codex standard adequately reflects global variation due to climatic differences and does not provide scope for unjustified barriers to trade, Codex should apply a rigorous, evidence-based scientific approach to these issues, to effectively deal with legitimate global concerns.

To that end, Australia proposes that the limit for campesterol in virgin olive oils in the Codex standard be reviewed, based on available data demonstrating the inadequacy of the current limit. Australia also proposes consequential consideration of the limit for stigmasterol, to safeguard olive oil integrity.

## BACKGROUND

In the early 1990s the CCFO began a review of the existing Codex standard with a view to aligning it with an industry standard set by the IOC.

The revised Codex standard was adopted by the Codex Alimentarius Commission in 2003. As consensus could not be reached on proposals to lower the existing 1.5% limit for linolenic acid, the Codex standard was adopted without a limit for linolenic acid in Section 3.9, with the following footnote:

*“Pending results of IOOC survey and further consideration by the Committee on Fats and Oils, national limits may remain in place”.*

The issue of an appropriate limit for linolenic acid is yet to be resolved by CCFO.

Linolenic acid is only one of several compositional components for which limits are set in Section 3 (Essential Composition and Quality Factors) of the Codex standard. Exceptions to these limits, which occur for numerous components, are most obvious for campesterol – a fact attested to in the scientific literature on olive oil composition (see Table 1 for some examples).

These data show that the campesterol limit is not achieved by a number of varieties in a number of different regions, including in traditional olive-growing countries. It is thus clear that the problem is not, as has been suggested, simply one of having grown the wrong variety in the wrong region – nor is it a problem restricted to Australia, to new producing countries or to countries with less experience in the growing of olives and the production and analysis of olive oils.

**Table 1: Selected examples of campesterol outside of IOC/EU/Codex specifications**

Variety/ Country	Problem	Reference
Cornicabra/ Spain	Between 25% and 75% of samples over 5 seasons >4.0, with average of 4.0 and std dev 0.2	Sterol and alcohol composition of Cornicabra virgin olive oil: the campesterol content exceeds the upper limit of 4% established by EU regulations. Rivera del Álamo, R.M., Fregapane, G., Aranda, F., Gómez-Alonso, S. and M.D. Salvador (2004). <i>Food Chem.</i> 84: 533-537.
Cornicabra/ Spain	>75% of samples over 5 seasons >4.0, with average of 4.2 and std dev 0.15	Cornicabra virgin olive oil: a study of five crop seasons. Composition, quality and oxidative stability. Salvador Rivera, M.D., Aranda, F., Gómez-Alonso, S. and G. Fregapane (2001). <i>Food Chem.</i> 74: 267-274.
Several/ Australia	Several samples outside of limits	The Natural Chemistry of Australian Extra Virgin Olive Oil. R.J. Mailer (2007). Rural Industries Research and Development Corporation, Canberra.
Barnea/ Australia	16 of 17 samples > 4.0, with average of 4.5 and std dev 0.3	A Survey of Australian Olive Cultivars to Determine Compliance with International Standards. R.J. Mailer & J. Ayton (2008). Rural Industries Research and Development Corporation, Canberra.
Koroneiki/ Australia	4 of 8 samples > 4.0, with average of 3.9 and std dev 0.6	A Survey of Australian Olive Cultivars to Determine Compliance with International Standards. R.J. Mailer & J. Ayton (2008). Rural Industries Research and Development Corporation, Canberra.
Several/ Argentina	All Barnea & 70% Arbequina samples > 4.0, with ranges up to 5.5	Characterization of Monovarietal Argentinian Olive Oils from New Productive Zones. Liliana N. Ceci & Amalia A. Carelli (2007). <i>J Am Oil Chem Soc</i> 84: 1125–1136.
Koroneiki/ Greece	Average of 72 samples: 4.2	Effect of Extraction System, Stage of Ripeness, and Kneading Temperature on the Sterol Composition of Virgin Olive Oils. A. Koutsafakis, F. Kotsifaki & E. Stefanoudaki (1999). <i>J Am Oil Chem Soc</i> 76: 1477–1481.
Several, Australia	39% (254 of 651) samples >4.0, multiple seasons, all regions, all varieties	Combined database of Australian olive oil analyses, AORL & MOLS, 2010.

## ISSUES

Limits for fatty acids, sterols and other minor components of olive oils are used by competent authorities in a number of Codex member countries to detect and prosecute fraudulent practices, in particular adulteration of olive oils with other edible oils. The compositional limits in Section 3 (Essential Composition and Quality Factors) of the Codex standard have been established primarily for this purpose. These limits are not relevant for the protection of public health and safety and are not principally aimed at defining the expected limits of olive oil composition.

Compositional limits set for these reasons can, and do, act to prevent legitimate trade in authentic virgin olive oils where the composition of such oils falls outside of the restrictive limits due to seasonal, varietal or geo/climatic conditions. It is acknowledged that exceptions to several of the compositional limits established in international standards for olive oils are common.

Recently, prospective buyers have rejected olive oils from Australia and other countries because the campesterol level was outside the limit defined in the Codex/IOC or the importing countries standards. The deviations from these standards did not reflect any inherent problems with the quality or authenticity of these oils but rather natural variations in oil chemistry. Indeed, plant sterols are recognised as being an important factor in enhancing the reputation of olive oil as being “healthy” oil. They have been found to be effective in lowering elevated cholesterol, and are now being added to a wide range of foods.

The limits for campesterol established in the IOC and Codex standards therefore demonstrably acts as a barrier to trade for authentic virgin olive oils. Since Codex standards are presumed to be consistent with WTO Agreements, the limits set for campesterol in such standards must be truly representative of global variability in these parameters in order to avoid such disruptions to trade. Standards should not be more trade restrictive than necessary to fulfil legitimate objectives.

Given the predicted substantial increase in production and trade of virgin olive oil from emerging olive producing countries and the evidence that the current limit for campesterol currently acts as a technical barrier to trade in virgin olive oils, the Codex standard should be reviewed to ensure it acts as a fair and equitable benchmark for international trade in olive oil.

It should be noted that the failure of Codex to address the natural variations shown by a significant proportion of oils produced around the world is currently being used not only as a trade barrier but also as a tool utilised by some to obtain high quality oils at a discounted price. The vast majority of these oils that do not meet the standard are blended with other olive oils until they meet the standardised limits for the particular component. The resultant blends are sold as virgin olive oil. Based on the standards, such a practice should not be allowed, since the blend of olive oil with any other oils cannot be considered to be an authentic olive oil. The practice is also clearly inconsistent with the Codex mandate of promoting fair practices in the food trade.

The effect of diverse factors on campesterol levels in olive oils is borne out in many studies. Recent work in Australia<sup>3</sup> demonstrates the strong genetics  $\times$  environment effect on campesterol levels, and clearly rules out adulteration or poor oil quality as causal factors.

## CONCLUSIONS

Australia seeks the agreement of the CCFO to initiate new work to review the campesterol limit in the Codex *Standard for Olive Oils and Olive Pomace Oils* (CODEX STAN 33-1981) so as to establish a limit that is truly representative of global variability in this parameter in virgin olive oils.

Australia contends that the limit for campesterol should be raised to a value which does not arbitrarily discriminate against authentic olive oils. Based on available evidence, Australia believes the limit should be set to 4.8%, a value which would encompass the great majority of oils produced from Barnea, Arbequina, Koroneiki, Cornicabra and similar high-campesterol varieties regardless of where in the world they are grown.

Anticipating the counter-argument that such a limit increases the prospects of adulteration of olive oils, Australia argues that a concomitant change of the limit for stigmaterol from the current limit which reads “< *campesterol*” to a specific limit of  $\leq 1.9\%$  will, along with limits for brassicasterol ( $\leq 0.1\%$  for grades other than olive pomace oils),  $\Delta^7$ -stigmastenol (currently  $\leq 0.5\%$ ) and apparent  $\beta$ -sitosterol ( $\geq 93\%$ ), safeguard the integrity of virgin olive oils and ensure fair practices in trade.

Australia recommends this work be conducted in conjunction with new work on the limit for  $\Delta^7$ -stigmastenol in the standard, as proposed by Syria.

A project document is appended for consideration by the committee.

---

<sup>3</sup> *Sterols in Australian Olive Oils: the effects of technological and biological factors*, Guillaume, C., Ravetti, L. & Johnson, J. (2010), Rural Industries Research and Development Corporation Publication No. 10/173.

**APPENDIX 1****PROPOSAL FOR NEW WORK – CODEX COMMITTEE ON FATS AND OILS****(prepared by Australia)****1. Purpose and Scope of the Proposed Work**

To review the current *Codex Standard for Olive Oils and Olive Pomace Oils (Codex Stan 33-1981)* (the Codex standard) to establish compositional parameters truly representative of global variability for virgin olive oils – in particular to revise the limit for campesterol, along with a consequential change to the limit for stigmasterol.

**2. Its Relevance and Timeliness**

The proposed work is within the Codex Committee on Fats and Oils (CCFO) term of reference: “*To elaborate world wide standards for fats and oils of animal, vegetable and marine origin including margarine and olive oil.*”

A recent global survey of virgin olive oils undertaken by the International Olive Council (IOC) at the request of CCFO (see CX/FO 05/19/04), and data from the scientific literature, indicate that a significant proportion of authentic virgin olive oils from a number of member countries regularly exceeds compositional limits established in the current Codex standard, in particular the limit for campesterol.

Australia and other countries have encountered difficulties in the trade of authentic virgin olive oils where they have failed to meet compositional limits established in the Codex standard. As Codex standards are referenced under WTO Agreements, the compositional limits set for sterols in virgin olive oil need to be truly representative of global variability in these parameters, in order to ensure that unrepresentative limits do not act as potential technical barriers to trade in authentic virgin olive oils.

It is necessary to review the limit for campesterol in Section 3 (Essential Composition and Quality Factors) of the Codex standard to take account of the global variability in sterol composition in virgin olive oils, given the increasing production and trade in virgin olive oils from all member nations.

**3. The Main Aspects to be Covered**

Revision of the limit for campesterol and, as a consequence, the limit for stigmasterol, in Section 3 (Essential Composition and Quality Factors) of the Codex standard, with regard to global data on virgin olive oil composition.

**4. An Assessment Against the Criteria for the Establishment of Work Priorities**

This new work proposal is consistent with the following criteria applicable to commodities:

*(a) Consumer protection from the point of view of health, food safety, ensuring fair practices in the food trade and taking into account the identified needs of developing countries.*

Compositional limits in the Codex standard have been established primarily for the purpose of ensuring fair practices in the food trade, i.e. identifying adulteration of olive oil with other edible oils. However, unrepresentative compositional limits can also act as technical barriers to trade in authentic virgin olive oils where such oils fall outside of the limits due to seasonal, varietal or geo/climatic reasons. These limits are not relevant for protection of public health and safety.

*(b) Volume of production and consumption in individual countries and volume and pattern of trade between countries.*

Global trade of olive oils in 2003/04 (excluding intra-EU trade) was 682 ktonnes<sup>4</sup>. This represents approximately 22% of global olive oil production (3,164.5 ktonnes in 2003/04). The top five exporting states or countries are the EC, Tunisia, Turkey, Syria and Morocco. Top five importing countries are the USA, the EC, Japan, Australia and Canada. Top five consumers (in volume) were the EC, the USA, Syria, Morocco and Tunisia.

---

<sup>4</sup> IOOC Survey of the analytical characteristics of edible virgin olive oils by producing area of the producer countries. CX/FO 05/19/4

(c) *Diversification of national legislations and apparent resultant or potential impediments to international trade.*

The Codex standard may be used as a benchmark for standards by member countries in setting their domestic regulations.

The WTO's Agreement on Technical Barriers to Trade provides that where a member adopts a technical regulation that is in accordance with a relevant international standard, it shall be *presumed not to constitute a barrier to trade* (Article 2.5). The adoption of a standard which is not underpinned by a rigorous evidence-based scientific framework provides scope for unjustified barriers to trade. There is sound scientific evidence on the global variation of levels of linolenic acid and other minor components of olive oils which demonstrates that they regularly exceed limits currently in the Codex and IOC olive oil standards.

The United States Department of Agriculture (USDA) recently completed revision of the *United States Standards for Grades of Olive Oil and Olive-Pomace Oil*. In revising the standard, the USDA set limits for linolenic acid (1.5%) and campesterol (4.5%) that diverge from the Codex standard, though these limits, being less restrictive, do not operate as impediments to international trade.

(d) *International or regional market potential.*

While EU countries, Tunisia, Turkey, Syria and Morocco are likely to remain the leading exporters of olive oils in the near future, considerable expansion of production in a number of other countries (eg Argentina, Israel, Brazil, Republic of South Africa, China and Australia) is likely to change trading patterns in the medium term. The Codex standard should be applicable to product from non-traditional olive oil producing countries.

(e) *Amenability of the commodity to standardisation.*

The Codex standard has been in place since 1981 and incorporates sections and provisions in line with Codex requirements for commodity standards. However, as different varieties emerge and production occurs under new geo/climatic conditions, differences in compositional parameters are becoming more apparent. Standardisation of olive oil parameters will require consideration of compositional data from new varieties, a broader range of countries and different production practices.

(f) *Coverage of the main consumer protection and trade issues by existing or proposed general standards.*

Natural compositional variation attributable to olive variety, season and geo/climatic conditions is not adequately addressed in the existing Codex standard. (g) *Work already undertaken by other international organizations in this field and/or suggested by the relevant international intergovernmental body(ies).*

The IOC recently carried out a survey of fatty acid profiles of virgin olive oils to inform adoption of a limit for linolenic acid in the Codex standard and to inform development and amendment of its own standards for olive oils. Responses were obtained from Australia, Egypt, France, Israel, New Zealand, Saudi Arabia and South Africa. Data from Australia, France, Israel, and Saudi Arabia all showed that a proportion of production consistently exceeded limits in the Codex and IOC standards.

Data gathered independently, and from the scientific literature, show that virgin olive oils from a number of countries, both traditional and emerging producers, consistently exceed the limits for campesterol.

## **5. Relevance to the Codex Strategic Objectives**

The new work proposed would contribute to ensuring fair practices in the international trade in virgin olive oils, taking into account the needs and special concerns of all countries, by satisfying the following strategic objectives and priorities elaborated in *Codex Alimentarius Commission: Strategic Plan 2008-2013*.

### *Goal 1: Promoting Sound Regulatory Frameworks:*

Development of more globally representative Codex standards will help to ensure their widest adoption by member countries, minimising the potential negative effects of technical regulations on international trade by ensuring that they do not act as technical barriers to trade.

### *Goal 2: Promoting Widest and Consistent Application of Scientific Principles and Risk Analysis:*

The proposed work will promote the development of Codex commodity standards based on rigorous scientific analysis of data collected from all regions of the world, so that the compositional parameters are globally relevant.

*Goal 4: Promoting Cooperation between Codex and Relevant International Organizations:*

Codex and member countries will continue to work closely with the IOC in collecting and analysing data and in developing more globally applicable requirements in the Codex and IOC standards.

**6. Information on the Relation Between the Proposal and Other Existing Codex Documents**

The proposed new work aims to review the current *Codex Standard for Olive Oils and Olive Pomace Oils (Codex Stan 33-1981)*.

**7. Identification of any Requirement for and Availability of Expert Scientific Advice**

None

**8. Identification of any Need for Technical Input to the Standard from External Bodies so that this can be Planned for**

Continued involvement of the IOC in the revision of the Codex standard would be expected.

**9. The Proposed Timeline for Completion of the New Work, (including the start date, the proposed date for adoption at Step 5, and the proposed date for adoption by the Commission; the time frame for developing a standard should not normally exceed five years.)**

Approval as new work by the 34<sup>th</sup> Session of the CAC 2011

Proposed draft amendments considered at step 4 by the 23<sup>rd</sup> Session of CCFO in 2013

Since the matter is minor, the proposed amendment could be sent to the Commission in 2013 for adoption at Step 5/8 with the omission of steps 6 and 7 in the Codex process.

**10. Work to be Lead by**

To be determined.

**11. Members of Electronic Working Group**

To be determined (if relevant).