



JOINT FAO/WHO FOOD STANDARDS PROGRAMME
CODEx COMMITTEE ON METHODS OF ANALYSIS AND SAMPLING

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COMMENTS OF INTERNATIONAL FRUIT AND VEGETABLE JUICE ASSOCIATION (IFU)

Justification for the need for a special working party to assess the methods for the “quality and authenticity” fruit juices.

Background to adulteration of fruit juices

Although the vast majority of producers of fruit juices (FJ) will produce products according to the CXS 247, there is always a few manufactures who do not follow the correct labelling rules and mis-represent their products as pure fruit juice. These manufactures will use a wide range of procedures to mis-represent/extend their products to ensure they can make an illicit profit.

The procedures used to extend a fruit juice will include for example the addition of:

- i. Undeclared addition of sugar and/or sugar syrups, e.g. addition of cheaper cane/corn sugars,
- ii. Substitution of an expensive fruit juice with a cheaper juice material e.g. addition of grape juice to raspberry or pomegranate juice,
- iii. Formulate a product to appear like a fruit juice to pass regulatory control tests.

To address these issues the FJ industry and regulators have spent a significant amount of time and money developing methods to exclude these unscrupulous practices/suppliers from the market to ensure the quality, authenticity and safety of this product class.

The methods utilised include simple tests such as

- i. HPLC for the quantification of sugars, certain acid and polyols,
- ii. Detection of relevant anthocyanins and polyphenols in a juice product,
- iii. Use of specific enzyme linked procedures for the analysis of organic acids, sugars and some polyols.

These types of methods can be used in a routine testing laboratory. However, it has been shown that more sophisticated methods do HAVE to be used in some cases and these include stable isotope testing methods ($^{13}\text{C}/^{12}\text{C}$, $^{18}\text{O}/^{16}\text{O}$ & H/D), to detect these complex adulteration issues.

Some examples of detected adulteration issues are:

- i. A company in the US in the 80's selling a product labelled as “apple juice” that actually contained little apple juice,
- ii. The 1991 UK MAFF study which showed that 16 out of 21 brands of orange juice on sale were adulterated with a range of undeclared additives (e.g. sugar and acids etc),
- iii. Mid late 2000's pomegranate juices on sale in US that contained undeclared added sugars and other undeclared fruit juices,
- iv. 2012 sale of lemon products labelled as juice which contained added undeclared citric acid,
- v. 2016 imports of a range of coconut waters blocked at the UK border due to the addition of undeclared cane/corn derived sugars,
- vi. 2023 samples of coconut water on sale in Asia clearly showing the presence of undeclared added cane/corn sugars,

- vii. 2025 IFU released a letter to its members highlighting an increased risk of the sale of suspect materials being offered to the juice market around the world.

This illustrates the need for methods to control the quality and authenticity of these products is still relevant today as it was in the early 2000's when CXS 247 was being developed.

Background to the endorsement of fruit juice methods in CXS 247 in 2005

In the early 2000's, during the preparation of the Codex standard for fruit juice and nectars (247) the special task force, chaired by Brazil, identified the critical need for methods to control the authenticity of these products should be included in the Codex Standard to protect legitimate producers from unfair competition.

The special task force set up a specialist sub-group of juice analysts, under the chair of Dr Carla Barry of Ag-Canada, to recommend suitable methods to be include in the standard prior to its adoption by the CAC. As part of this process suitable methods, including procedures published by IFU, ISO, AOAC and NMKL, were submitted to CCMAS in 2004, together with validation data, for endorsement. However, as only a few of these methods actually contained a "provision" in the draft standard, CCMAS could not endorse them at that stage.

This topic was taken back to the last meeting of the task force, in 2004, and it agreed that the inclusion of the proposed methods was critical for an effective use of the Codex standard. Therefore, the task force introduced a general provision in the standard called "quality and authenticity" to allow for the methods' endorsement.

Extract from CXS 247

"3.2 Quality criteria

The fruit juices and fruit nectars shall have the characteristic colour, aroma and flavour of juice from the same kind of fruit from which it is made. The fruit shall retain no more water from washing, steaming or other preparatory operations than technologically unavoidable.

3.3 Authenticity

Authenticity is the maintenance of the product's essential physical, chemical, organoleptic, and nutritional characteristics of the fruit(s) from which it comes.

3.4 Verification of composition, quality and authenticity

Fruit juices and nectars should be subject to testing for authenticity, composition and quality, where applicable and where required. The analytical methods used should be those found in Section 9 Methods of analysis and sampling.

The verification of a sample's authenticity/quality can be assessed by comparison of data for the sample, generated using appropriate methods included in the standard, with that produced for fruit of the same type and from the same region, allowing for natural variations, seasonal changes and for variations occurring due to processing."

The proposed methods were brought back to CCMAS in 2005 for reconsideration. With the new provision in the draft of CXS 247, CCMAS considered the methods were "fit for purpose" and endorsed all the proposed methods.

As highlighted above, the detection of the adulteration of fruit juices is not a simple process and can involve the use of a range of very different procedures. Assessing procedures to assess the authenticity of a fruit juice is not like the endorsement of a method to determine the level for an additive's addition or the presence of contaminant. In both of these cases a defined maximum use level or maximum permitted level of contamination (ML) is likely to be defined. However, in the case of an assessment of authenticity a LOD or LOQ for a method are generally NOT directly relevant for this determination. This is because the analyst will often be looking for a deviation in the level a component that is often a natural constituent of the juice. From some of the comments submitted as part of the EWG work it was clear that this subtle difference was not fully appreciated by all codex members.

IFU is of the opinion it would make sense to apply a similar approach that was applied in the early 2000's that a group of juice experts should look at the presently endorsed methods and determine which are still fit for purpose and should be re-endorsed in the updated CXS 234.

To achieve this

1. IFU proposed to the physical WG for the endorsement of methods that a small expert working party be formed, under the auspices of IFU, taken from experts in juice analysis from around the world.
2. This group would then re-evaluate the endorsed methods in STN 247/234 and determine, in their expert opinion, which of these methods should be re-endorsed for inclusion in the revised updated CXS 234.

3. Any methods deemed unsuitable would not be proposed for re-endorsement.
4. An overview of the group's findings, together with the justifications for their conclusions, would then be submitted, prior to the end of the year, for consideration by the CCMAS electronic WG for fruit juice methods prior to CCMAS 45 in March 2026.
5. Additionally, if the WP decides some new methods should be proposed for adoption by CCMAS, at a subsequent meeting, it would collate the relevant validation data for submission to the P-WG on endorsement at a later stage against the general provision of "quality and authenticity".

IFU understands this is a deviation from the normal CODEX procedure but there was a similar precedent when handling other complex authenticity issues such as for olive oil. IFU thinks that this approach would be the best and quickest way to achieve a suitable outcome for this complex issue.

As the conclusions from this expert working party would be submitted to the relevant CCMAS E-WG, the normal Codex oversight would apply prior to submission for approval by the P-WG and plenary session of CCMAS.

For and on behalf of the International Fruit and vegetable juice Association

DR D A Hammond

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