

codex alimentarius commission

FOOD AND AGRICULTURE
ORGANIZATION
OF THE UNITED NATIONS

WORLD HEALTH
ORGANIZATION

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Agenda Item 7

CX/PFV 00/7 Add.1
August 2000

JOINT FAO/WHO FOOD STANDARDS PROGRAMME

CODEX COMMITTEE ON PROCESSED FRUITS AND VEGETABLES

Twentieth Session

Washington, D.C., USA, 11-15 September 2000

METHODS OF ANALYSIS FOR PROCESSED FRUITS AND VEGETABLES

Comments from Argentina, Canada, France, Spain, United States, and the International Olive Oil Council

ARGENTINA

Having reviewed the referenced document, we consider that in Appendix II (Pg. 8), where the tolerance for arsenic in chutney (condiment- sauce) is found, the unit used "%m/m" is incorrect and should be "mg/kg". This is based on the tolerances for heavy metals that appear in article 156 of the Argentine Food Code, which for arsenic varies according to the presentation of the product: for liquids it is 0.1mg/kg and for solids, 1 mg/kg

To our understanding, the 0.5 % m/m that is used in the appendix is equivalent to 5,000 mg/kg, which we consider to be exaggeratedly high.

Other than what is stated above, we have no other comments to make.

CANADA

Appendix 1: Additional Information

General Comment:

Canada presumes that ISO and AOAC methods are equivalent. Prior to the methods being approved, Canada suggests that they be endorsed as a type 1 or type 2 method by CCMAS.

3. Lactic Acid in Edible Fungi and Fungus Products:

Canada suggests to include the enzymatic method for the determination of lactic acid in juice in IFU NN 53.

6. Calcium in Processed Fruits and Vegetables:

Canada suggests that an atomic absorption method be identified for calcium. Perhaps IFU NN 33 would be applicable.

7. Total Solids (in °Brix) in Processed Fruits and Vegetables:

Two AOAC methods are identified, in which only one can be designated as a type 1 or type 2 method. The other must be a type 3 method. Canada presumes that the Committee requests the first mentioned method to be endorsed by CCMAS as type 1 or 2 method.

8. Sulphite in Processed Fruits and Vegetables:

Canada has identified this reference to be incorrect. The method should be specified as AOAC 990.28, the Optimized Monier-Williams Method for sulphites.

Method N: Determination of Volume of Fill (by Displacement) (Pickled Cucumber):

The comments regarding Method N are very confusing. V_1 and V_2 need to be defined. Also the unit of measure for the volumes need to be specified as mL since we are making reference to method E whose unit of measure is mL. In method 3, the equation should read

$$\text{percent volume of pickle ingredient} = V_2/V_1 \times 100$$

Methods of Sampling:

CCMAS has completed its Sampling document. Canada suggests that it be referenced here instead of the ISO reference.

Appendix II: Methods of Analysis for the Standards for Processed Fruits and Vegetables

Canada has identified this reference for sulphites to be incorrect. The method should be specified as AOAC 990.28, the Optimized Monier-Williams Method.

Canada suggests that an atomic absorption method be included for arsenic in pickles. Canada recommends AOAC 986.15.

Canada suggests that besides the liquid chromatography method IFU NN 63, for benzoic acid in pickles, the liquid chromatography method, AOAC 994.11, is also recommended.

Canada has identified that the method specified for benzoic acid in pickles is incorrect. That method, i.e., AOAC 990.28 is the method for sulphite and not for benzoic acid.

Canada also suggests to include AOAC 986.15, an atomic absorption method for identifying lead in pickles.

It is recommended that AOAC 939.10, specified for salt in pickles, be removed. This method has been supplused by AOAC.

It is recommended that AOAC 980.19, specified for tin in pickles be removed. This method has been supplused by AOAC 985.16. Canada recommends for an atomic absorption method be used as a replacement.

Annex 1: Methods of Analysis Previously Recommended as CAC/RMS or Stated in the Standards

A. Determination of Drained Weight - Method II

The weighing of the full container and the weighing of the dry empty container were removed from Section A. Canada suggests that they be included in the instructions until the Committee drafts the appropriate text for these procedures

Canada suggests for the method to include materials such as a dish or receptacle large enough for the sieve to fit into so as to collect the drained liquid and to also include instructions for the weighing of the drained liquid.

Canada suggests for the dimensions of the sieves, to include a uniform thickness of 0.054 inch diameter.

C. Determination of Washed Drained Weight

1. Definition

It is unclear of the product being used to determine the drained weight of the product. It should read, AFor products mixed with viscous fluids such as gravy, sauce and syrup, washed drained weight expresses % m/m solid contents after washing, with hot water, as described by the procedure described below.

3. Procedure

Canada suggests that the word Acan≡ be replaced with the word Acontainer≡ in the procedure.

Annex II- Methods of Sampling

CCMAS has already elaborated on the sampling plans and should be included in here.

FRANCE

The submitted document calls for two general comments. First and foremost, approved methods of analysis to determine the compliance of products with CODEX standards should, as far as possible, reflect ISO or equivalent methods. Secondly, endorsed methods should be as inclusive as possible.

APPENDIX I – ADDITIONAL INFORMATION

2 – **Tin in chutney**: the method ISO 2247/1974 has been supplused. AOAC 986.15 has been replaced by AOAC 986.16 from 12997 (determination of tin in canned food by atomic absorption).

3 – Lactic acid in edible fungi and fungus products. **The enzymatic method should be endorsed even though it is not referenced to an ISO method.**

4 – Total ash in chutney: **Method ISO 5516:1978 is equivalent to AOAC 940.26.**

6 – **Calcium in processed fruits and vegetables.** AOAC 963.31 is a titrimetry method that should be barred. Since there is no equivalent ISO method it would be advisable to rely on atomic absorption.

We recommend using the atomic absorption method since it is more sensitive than complexometric titrimetry.

8 – **Sulphite in processed fruits and vegetables**

The French version is incorrect: the word “sulfate” should be replaced by “sulfite”.

9 – **Sodium chloride in processed fruits and vegetables.** The method ISO 3634:1979 is not equivalent to AOAC 971.26. The ISO method does not rely on potentiometric analysis to establish final determination.

* * *

METHOD A: Determination of Drained Weight – Method II – (see Appendix I)

2.2: Following the modification of section 2.1, “1.5 kg” should be replaced by “1 kg”.

2.3: The mesh openings of recommended sieve are too wide; we recommend using a “flat sieve with 2.5 mm square openings (wire thickness of 0.85 mm in compliance with ISO 3310/1 standard)”.

3: Modification: Start paragraph with: “Weigh the container before opening it (Gw)”.

Add “Dw1” after “for which a tare has been established”.

For additional clarity, the sentence “At the end of the two minute draining period... weight of the sieve” should be replaced with “ At the end of the two minute draining period, weigh the sieve and its content (Dw2). The net drained weight equals ... (Dw2 - Dw1)”.

METHOD B: Tough String Test (see Appendix I)

The wording of the French method reads as follows:

DETERMINATION OF THE PERCENTAGE OF STRINGED BEANS

- PROCEDURE:

Determination of the percentage of stringed beans is based on total net drained weight of prepackaged product for containers of 850 ml capacity or less.

For containers whose capacity is more than 850 ml, the analysis shall be based on a 500 g sample of drained beans.

Grasping a bean between two fingers, break it down its middle.

Set aside those that show evidence of strings though enough to support tension and longer than 3 cm.

Weigh the stringed beans with a precision of ± 0.1 g.

Measure the ratio (percentage) of stringed beans to the established net drained weight or to the sampled weight (500 g).

METHOD C: DETERMINATION OF WASHED DRAINED WEIGHT

Specifications of circular sieves used in Method A should also apply to Method C.

As to the procedure, the only additional item should be washing the contents of the sieve under running cold water and then under running hot water.

All other provisions established for Method A should apply to Method C.

3.4: Replace “mushroom” with “product”.

METHOD H: Determination of Mineral Oil in Raisins

Implementing this method may prove hazardous for many users. For example, a toxic solvent such as chloroform should not be used. A different extracting solvent should be recommended.

4.3: The proposed amount of chloroform (200 ml) is deemed excessive.

4.8: Given the toxicity of such a substance, using a steam bath to evaporate 50 ml of chloroform should be avoided. A different process should be recommended. In any case, such a procedure requires a fume evacuator.

8.2: CS₂ is a highly toxic substance.

METHOD M: Determination of Broken, Slabs, Dirty, Mouldy, Damaged and Immature Fruits

The English text states that this method refers to dried apricots when in fact it applies to all dried fruits. It may even apply to canned products since the purpose of this method is to determine the ratio of defective units (m/m) to the sample's total weight, multiplied by a hundred-fold to obtain a percentage.

METHOD N: Determination of Volume Fill (by displacement) (Pickled Cucumber)

The purpose of this method is to determine the percent volume of pickles within the container. Since there is no need to establish a filling procedure specifically for pickles, the desirability of such a method is questionable. These products should be covered by the general procedure, which calls for a minimum drained weight expressed as a percentage based on the weight of distilled water (20°C) contained in a sealed container which is filled to its full capacity.

Methods of Sampling:

While convened in Budapest, in 1998, the CCMAS initiated proposals (project planned for March 2001) such as a general sampling document and various sampling plans based on either health issues or products defects.

Each Committee would then make a selection among the proposed methods.

MEXICO

Appendix I. Additional information.

- a) In terms of the Methods of Analysis for Processed Fruits and Vegetables that are included in this Committee, in general, the ones that are reviewed in this document are the most relevant and are those that apply to the majority of products.
- b) The Methods are those proposed by the AOAC (Assoc. of Offic. Anal. Chemists.) and ISO, which are in general those that are applied in industry and educational institutions.
- c) The proposals for updating the previous versions of the AOAC methods and ISO standards: we accept the proposal.
- d) Change in the size of the sample: we accept the proposal.
- e) Errors in the units or location of the decimal point: we accept the proposal.

Appendix II. Methods of Analysis for Standards for Processed Fruits and Vegetables.

Indicates the Standard studied, the changes proposed in the Methods, Source, Step, Equipment and Notes.

Document that gives a wider panorama of work that is being done by the expert groups.

Annex 1. Methods of Analysis recommended in CAC/RMS or established in the Standards.

The Methods of Analysis described for horticultural products.

We are in agreement with these suggestions.

SPAIN

Appendix I

Additional Information

In point 8, "Sulphite in processed fruits and vegetables", reference is made to the method AOAC 990.26, which is the method for determining hydroxyproline. The method for determining sulphites is AOAC 990.28.

Method H: "Determination of Mineral Oil in Raisins"

In section 2, "Apparatus", we consider it necessary to include the rotary evaporator in order to facilitate the elimination of the dissolvent and as an alternative to the steam bath.

Method N, “Determination of Volume of Fill by Displacement”

In Method I, in the 10th line, the number of wires should be expressed as wires per centimeter rather than per inch.

Appendix II

Methods of Analysis for Processed Fruits and Vegetables

- *Dried edible fungi standard, “determination of water”*
We propose AOAC method 967.19 for the determination of moisture in dried vegetable products.
- *Edible fungi and fungus products standard, “determination of water”*
We propose AOAC method 967.19 for the determination of moisture in dried vegetable products.

UNITED STATES

- The United States recognizes the importance and benefit of having known methods for performing the analyses called for in the Codex standards for processed fruits and vegetables. We also recognize that there exist international organizations and other organizations and bodies which develop, sanction, and/or use various analytical methods. Among these are AOAC International, the International Organization for Standardization (ISO), national governments, and others. When methods are comparable, i.e., yield equivalent results, we believe it is appropriate to recognize use of multiple methods. This allows for flexibility and can be economically beneficial. We also note that it may be difficult for some potential users of Codex standards to have access to certain analytical methods. As a result, an effort by the CCPFV to be inclusive of multiple methods would be beneficial as it would help ensure access to methods among all standards users.
- Inclusion of appropriate methods or procedures from the Official Methods of Analysis of AOAC International is beneficial as the AOAC methods are widely recognized.
- Several of the recommendations presented in Appendix I are not accompanied by justifications or information as to why the change(s) are being suggested. It would be helpful if this information were made available.

Detailed Comments on Appendices I and II

- 2. Tin in chutney: - The replacement of AOAC 980.19 with AOAC 985.16 is appropriate since the former is an AOAC surplus method.
- The second listing of the AOAC number is mistyped and should be corrected from AOAC 986.15 to AOAC 985.16.

8. Sulphite in processed fruits and vegetables:

Appendices I and II list AOAC 990.26 "Hydroxyproline in Meat and Meat Products" as the method for sulfites. This seems to be a typographical error since the AOAC method for "Sulfites in Foods" is 990.28.

Pickles (benzoic acid): Appendix II lists AOAC 990.28 "Sulfites in Foods" as the method for benzoic acid in Pickles. It is unclear why this method was chosen.

Pickles (arsenic): Appendix II lists AOAC 952.13, a surplus method, as the method. It is not clear why this method was chosen.

Detailed Comments on Methods of Analysis A through Q

These comments refer to recommendations in Appendix I and text presented in Annex 1.

Method A: Determination of Drained Weight - Method II

- It would be helpful if the title stated that the method is for canned tomatoes.
- U.S. practices use 3 pounds as the cut-off point between sieve sizes. The text of Appendix I changes this to 2 pounds but does not provide an explanation for this change. As a result, we recommend that the cut-off weight be returned to 3 pounds as in the original text. (Note: If the change to 2 pounds is kept, then the weight in section 2.2 of the method should be changed from "1.5 kg (3 lb)" to "1 kg (2 lb)" to be consistent with the change recommended in item 2.1.)
- It may be helpful to include a formula for calculating the percent drained weight.

Method B: Tough String Test

- The information in Appendix I suggests replacing the existing Method B with the "French method." Before responding to the suggestion, it would be helpful for the CCPFV to have available the text of the French method. We suggest that, unless the French method is very similar or identical to Method B, the existing Method B be retained. Alternatively, it may be advantageous to provide for both procedures if they yield equivalent results. We note that no justification is provided in Appendix I for replacing Method B with the French method.

Method C: Determination of Washed Drained Weight

- It would be helpful if the title stated that the method is intended for canned mushrooms in a viscous sauce.
- We note that the text of Section 2.1, Method C, Annex 1 does not reflect the sieve opening recommendation in Appendix I, Method C, item 2. This omission should be addressed.

Method D: Determination of Proper Fill in Lieu of Drained Weight

- Appendix I recommends deletion of this method; however, no reason for this recommendation is provided. As this method is in use in commercial trade, it would be appropriate to retain it.
- It would be helpful if the title indicated that the method is for canned green peas.

Method E: Determination of Water Capacity of Containers

- Appendix I recommends limiting this procedure to glass containers and refers to ISO 90-1 for metal containers. It would be helpful for the CCPFV to have a copy of the text of ISO 90-1 so as to allow the CCPFV to compare the methods and evaluate the change. If the CCPFV determines to limit the method to glass containers, it would be appropriate to delete all references to metal containers. Alternatively, it may be advantageous to continue to allow Method E to be applied to both metal and glass containers and also recognize use of ISO 90-1 for metal containers.

Method G: Determination of Mineral Impurities (Sand Test) in Raisins

- We offer the following typographical corrections for Annex 1, Method G: In the last sentence in paragraph 1, change "on" to "of". In the first sentence of paragraph 4.9, change "It" to "At".
- United States practices include a similar, but not identical method. As a result, we recommend that the CCPFV allow for use of alternative methods which provide equivalent results.

Method N: Determination of Volume Fill (by Displacement) (Pickled Cucumbers)

- We recommend adding "*x100*" to the formula in Method 3.

Detailed Comments on Methods of Sampling A through G

These comments refer to recommendations in Appendix I and text presented in Annex II.

The text in Appendix I states that the CCPFV should consider requesting the Codex Committee on Methods of Analysis and Sampling (CCMAS) to consider adopting ISO 2859-1:1989 for methods of sampling; however, no explanation is given for this recommendation.

Method A: Canned Fruit Cocktail

- We recommend that all analyses be performed on the entire contents of retail or food service size containers, regardless of container size. This will help ensure that samples are representative.

IOOC

With respect to the methods applicable to table olives (Method J: Determination of acidity and Method K: Determination of pH), I would be grateful if you would bear in mind the proposal that the International Olive Oil Council made to the Codex Alimentarius Secretariat to hold a joint IOOC-CODEX meeting in order to prepare a draft revised Codex standard for table olives. This proposal was based on the decision taken by the Codex Committee on Processed Fruits and Vegetables (ALINORM 99/27, para. 67) to request IOOC cooperation in preparing such a draft.

Consequently, the methods of analysis for table olives would be revised when this meeting takes place.