codex alimentarius commission

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

WORLD HEALTH ORGANIZATION

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Agenda Item 6 **CX/MAS 02/7**

JOINT FAO/WHO FOOD STANDARDS PROGRAMME

CODEX COMMITTEE ON METHODS OF ANALYSIS AND SAMPLING
Twenty-fourth Session
Budapest, Hungary, 18-22 November 2002

ENDORSEMENT OF METHODS OF ANALYSIS PROVISIONS IN CODEX STANDARDS

This document contains the Methods of analysis proposed by the following Committees in Draft Standards and Proposed Draft Standards under elaboration or as a revision of the methods included in adopted standards.

A. Codex Committee on Fats and Oils

B. Codex Committee on Cocoa Products and Chocolate

C. Codex Committee on Milk and Milk Products

D. Codex Committee on Fish and Fishery Products

E. *Ad hoc* Intergovernmental Task Force on Fruit and Vegetable Juices

The General Methods for the Detection of Irradiated Foods are presented in CX/MAS 02/7-Add.1.

The methods proposed by the Committee on Processed Fruits and Vegetables will be presented in a separate document (CX/MAS 02/7-Add.2).

A. CODEX COMMITTEE ON FATS AND OILS

Draft Standard for Fat Spreads and Blended Spreads (at Step 6)

COMMODITY	PROVISION	METHOD	PRINCIPLE	Note
Fat Spreads and Blended Spreads	Lead	IUPAC 2.632, AOAC 994.02 or ISO 12193: 1994 or AOCS Ca 18c-91.	Atomic absorption spectrophotometry (direct graphite furnace)	
	Arsenic	AOAC 952.13, IUPAC 3.136	Colorimetry (diethyldithiocarbamate)	
		AOAC 942.17	Colorimetry (molybdenum blue)	
		AOAC 985.16	AAS	
	Milk fat content	IUPAC 2.310, AOAC 990.27 or AOCS Ca 5c-87 (97).	Gravimetry	
	Vitamin A	AOAC 985.30.	Spectrophotometry	
	Vitamin D	AOAC 981.17.	Liquid chromatography	
	Vitamin E	IUPAC 2.432 or ISO 9936: 1997	TLC followed by spectrophotometry or GLC	

B. CODEX COMMITTEE ON COCOA PRODUCTS AND CHOCOLATE

Draft Standard for Chocolate and Chocolate Products (at Step 8)

The following methods of analysis are submitted for consideration. All other methods included in the Draft Standard had ben previously endorsed.

COMMODITY	PROVISION	METHOD	PRINCIPLE	Note
Chocolate and chocolate products	Milk Fat	IOCCC 5-1962 AOAC 945.34; 925.41B; 920.80	Titrimetry/Distillation	Previously endorsed as Type I Amendment to IOOC method

1. Determination of centre and coating of filled chocolate
All methods approved for the chocolate type used for the coating and those approved for the type of centre concerned

2. DETERMINATION OF NON-COCOA BUTTER VEGETABLE FAT IN CHOCOLATE AND CHOCOLATE PRODUCTS

The following methods of analysis are the best available at the present time. Further systematic improvement is required. Documentation identifying the type of commercial blends of non-cocoa butter vegetable fats used must be made available upon request by competent authorities.

Detection of Non-Cocoa Butter Vegetable Fats in Chocolate

Detecting sterol breakdown products in refined vegetable fats added to chocolate by the method of *J. Amer. Oil Chem. Soc.* 1997, **74(10),** 1273-1280

Quantitative Determination of Non-Cocoa Butter Vegetable Fats[1]

Determination of the triacyglycerols (C50, C52, C54) present in cocoa butters and non-cocoa butter vegetable fats by GC-FID in *J. Amer. Oil Chem. Soc.* (1980), **57**, 286-293. In milk chocolate, there is a need to correct for the milk fat

- **Interpretation:**

When type of non-cocoa butter vegetable fat is known, the amount of non-cocoa butter vegetable fat is calculated according to *J. Amer. Oil Chem. Soc.* (1980), **57**, 286-293.
When type of non-cocoa butter vegetable fat is not known, the calculation is made according to *J. Amer. Oil Chem. Soc.* (1982), **61 (3)**, 576-581.

C. CODEX COMMITTEE ON MILK AND MILK PRODUCTS

1. Methods of analysis referred back to CCMMP

Fermented milks	Lactic acid	IDF 150:1991 ISO 11869:1997	Potentiometry, titration to pH 8.30	Question from CCMAS: whether the IDF method determines total acidity or lactic acid as in the provision (Not endorsed) Not considered by CCMMP Proposed as Type I
	Lactic acid requirements as above	AOAC 937.05	Spectrophotometry (for lactic acid in milk & milk products)	Question from CCMAS to clarify what type method is requested since there cannot be two type I or II methods. Not considered by CCMMP

[1] This method is intended to measure vegetable fats which are cocoa butter equivalents (CBE) i.e. SOS type triglycerides. Other vegetable fats can only be added in very limited amounts before they affect the physical properties of chocolate in a detrimental way. These can be determined by conventional methods i.e. fatty acid and triacyglycerol analyses.

	Microorganisms constituting the starter culture	IDF 149A:1997 (Annex A)	Colony count at 25°C, 30°C, 37°C and 45°C according to the starter organism in question	Question from CCMAS on whether a collaborative study has been performed and the type of the method. Temporary endorsed as Type I - Not considered by CCMMP
Yoghurt	*Streptococcus thermophilus* & *Lactobacillus delbrueckii* subsp. *Bulgaricus* >= 10^7 cfu/g	IDF 117B:1997 ISO 7889	Colony count at 37°C	Same question as above Not considered by CCMMP
Yoghurt	*Streptococcus thermophilus* & *Lactobacillus delbrueckii* subsp. *bulgaricus* >= 10^7 cfu/g	IDF 146:1991 ISO 9232	Test for identification	Same question as above Not considered by CCMMP

2. Methods of analysis proposed for standards under elaboration (advanced to Step 5 or 8)

- **Draft Standard for Cream and Prepared Creams (Step 8)**
- **Draft Revised Standard for Whey Powders (Step 8)**
- **Draft Revised Standard for Fermented Milks (Step 8)**

Cream and Prepared Creams	Milk protein >= 35% (m/m)	ISO 8968-1 |IDF20-1:2001 AOAC 991.20	Titrimetry (Kjeldahl)	The method is applicable for all kind of milk products but validated for milk only - proposed as Type I
Whey powders	Milk protein (Whey powder) >= [11.0] % (m/m) (Acid whey powder) >= [7.0] % m/m	ISO 8968-1 | IDF 20-1:2001 AOAC 991.20	Titrimetry (modified Kjeldahl)	The method is applicable for all kind of milk products but validated for milk only - Proposed as Type I
	Water (not including water of crystallization of lactose)	IDF 26A:1993	Gravimetry	Under revision to become ISO 5537 | IDF 26 **Note**: IDF 58:1970 and ISO 2920 endorsed in 1998 as Type IV

Fermented milks	Protein	ISO 8968-1 | IDF 20-1:2001	Titrimetry (Kjeldahl)	The method is applicable for all kind of milk products but validated for milk only. Change in reference (previously endorsed as IDF 20B:1993 in 2001 as Type I)
	Milk fat (< = 10%	ISO 1736:2000		

3. Amendments to methods of analysis in adopted standards

Individual cheeses	Milk fat in dry matter	IDF 126A:1988 ISO 8262-3:1987	Gravimetry (Weibull-Berntrop)	Proposed as Type II In addition to IDF 5B:1986; ISO 1735:1987; AOAC 933.05 (endorsed as Type I)
Individual cheeses	Dry matter (Total solids) In the range of: >= 42-64% (m/m	IDF 4A:1982 ISO 5534:1985 AOAC- all methods differ	Gravimetry, drying at 102°C	Endorsed as Type I. Question from CCMAS on the difference in results between the previous method and this method. Not considered by CCMMP Under revision to become ISO 5534 | IDF 4

D. COMMITTEE ON FISH AND FISHERY PRODUCTS

Draft Standard for Boiled Dried Salted Anchovies (at Step 8)

COMMODITY	PROVISION	METHOD	PRINCIPLE	Note
Boiled Dried Salted Anchovies	Sodium Chloride	AOAC 937.09	Volumetric Method	
	Water Activity	AOAC 978.18		

DETERMINATION OF ACID INSOLUBLE ASH (ANNEX B of the Draft Standard)

1. PREPARATION OF SAMPLE

1.1 Use sample from A1.1

2. REAGENT

2.1 Dilute hydrochloric acid, 1:1

3. PROCEDURE

3.1 Weigh accurately about 2 g of the dried sample (from A1.1) in a tared porcelain, silica or platinum dish. Ignite with a burner for about 1 hour. Complete the ignition by putting sample in a muffle furnace at 600 ± 20°C until grey ash results.

3.2 Cool and add 25 ml of dilute hydrochloric acid, cover with a watch-glass and heat on a water bath for 10 min.

3.3 Cool and filter through Whatman filter paper No. 42 or its equivalent.

3.4 Wash the residue with hot water until the washings are free from chlorides as tested with silver nitrate solution and return the filter paper and residue to the dish. Keep it in an electric air oven maintained at 135 ± 2°C for about 3 hours.

3.5 Ignite it in a muffle furnace at 600 ± 20°C for 1 hour. Cool in a desiccator and weigh. Ignite the dish again for 30 min, cool and weigh. Repeat this procedure until the difference between two successive weightings is less than 1 mg. Record the lowest weight.

3.6 CALCULATION

$$\text{Acid insoluble ash, per cent by weight} = \frac{(W_2 - W)}{(W_1 - W)} \times 100$$

where,

W is the weight in grammes, of the empty dish

W_1 is the weight in grammes, of the dish with the dried sample taken from the test

W_2 is the lowest weight in grammes, of the dish with the acid insoluble ash.

E. *AD HOC* INTERGOVERNMENTAL TASK FORCE ON FRUIT AND VEGETABLE JUICES

The *Ad hoc* Intergovernmental Task Force on Fruit and Vegetable Juices proposed methods of analysis for inclusion in the Proposed Draft General Standard for Fruit Juices and Nectars and in the Proposed Draft Revised Standard for Vegetable Juices (ALINORM 03/39, para. 51, Appendices II and III)

The CCMAS is invited to note that 1) these Proposed Draft Standards have been returned to Step 3 for redrafting and the provisions in both standards might be subject to substantial revision and 2) many methods proposed do not correspond to provisions included in the standards. The CCMAS may wish invite the Task Force to provide further clarification on the methods to be included in the Proposed Draft Standards.

Commodity	Provision	Method	Principle	Notes	Codex Type
Juices	acetic acid	EN 12632; IFU Method No66 (1996)	enzymatic determination	Quality method	II
Juices	alcohol (ethanol)	IFU Method No52,1983/1996	enzymatic determination	Quality method	II
Juices	anthocyanins	IFU Method No71 (1998)	high performance liquid chromatography	Authenticity method	I
Juices	ascorbic acid-L	IFU Method No17a (1995)	high performance liquid chromatography	Quality method	II
Juices	ascorbic-L	AOAC 967.21; IFU Method No 17	titration	Quality method	III
Juices	ash in fruit products	AOAC 940.26 - JAOAC 23,314(1940); EN1135(1994); IFU Method No9 (1989)	gravimetry	Authenticity method	I
Juices	beet sugar in fruit juices	AOAC 995.17 - JAOAC 79, 917(1996)	deuterium NMR	Authenticity method	I
Orange juice	benzoic acid as a marker in orange juice	AOAC 994.11 - JAOAC 78, 80(1995)	high performance liquid chromatography	Authenticity method	II
Juices	C^{13}/C^{12} ratio of ethanol derived from fruit juices	collaborative study submitted to AOAC	stable isotope mass spectrometry	Authenticity method	III
Apple juice	carbon stable isotope ratio of apple juice	AOAC 981.09 - JAOAC 64, 85(1981)	stable isotope mass spectrometry	Authenticity method	II
Orange juice	carbon stable isotope ratio of orange juice	AOAC 982.21 - JAOAC 65, 608(1982) J.Agric.Food Chem, 29, 803-804, 1981	stable isotope mass spectrometry	Authenticity method	II
Juices	carotenoid, total/ individual groups	EN 12136 (1997); IFU Method No59,1991	precipitation/ fractionation	Authenticity method	I
Juices	centrifugable pulp	EN12134; IFU Method No60,1991/1998	centrifugation/% value	Quality method	I
Juices	chloride (expressed as sodium chloride)	EN12133; IFU Method No 37, 1968	potentiometry	Quality method	II
Juices	chloride	AOAC 971.27 (Codex general method)	potentiometry	Quality method	III
Juices	citric acid	AOAC 986.13 - JAOAC 69, 594 (1986) - JAOAC 77, 411 (1994)	high performance liquid chromatography	Authenticity method	III
Juices	citric acid	EN 1137; IFU Method No22,1985	enzymatic determination	Authenticity method	II
Juices	essential oils	AOAC 968.20; IFU 45b	(Scott) distillation, titration	Quality method	I
Juices	fermentability	IFU Method No 18, 1974	microbiology	Quality method	I
Juices	formol number	EN 1133 (1994); IFU Method No30(1984)	potentiometry	Authenicity method	I
Juices	free amino acids	EN 12742; IFU Method No57,1989	column chromatography/ spectrophotometry	Authenicity method	II
Juices	fumaric acid	IFU Method No72 (1998)	high performance liquid chromatography	Quality method	II
Juices	glucose, fructose, sorbitol	EN 12630; IFU Method No67 (1996)	high performance liquid chromatography	Authenticity method	III
Juices	glucose-D fructose-D	EN 1140; IFU Method No55,1985	enzymatic determination	Authenticity method	II
Juices	gluconic acid	IFU Method No 76 (2001)	enzymatic determination	Quality method	II
Juices	glycerol	IFU Method No77 (2001)	enzymatic determination	Quality method	II
Juices	hesperidin and naringin	EN12148(1996); IFU Method No 58 (1991)	high performance liquid chromatography	Authenticity method	II
Apple juice	high fructose corn syrup and hydrolized inulin syrup in apple juice	AOAC COLLABORATIVE STUDY IN PROGRESS	capillary gas chromatography	Authenticity method	I
Juices	hydroxymethylfurfural	IFU Method No69 (1996)	high performance liquid chromatography	Authenticity method	II
Juices	isocitric acid-D	EN 1139; IFU Method No54,1984	enzymatic determination	Authenticity method	II
Juices	lactic acid-D and L	EN 12631 (1999); IFU Method No53 (1983/1996)	enzymatic determination	Quality method	II
Juices	limonin in citrus juices and concentrates	AOAC collab in progress	high performance liquid chromatography	Authenticity method	III

Commodity	Provision	Method	Principle	Notes	Codex Type
Apple juice	malic acid (L-malic/total malic acid ratio in apple juice)	AOAC 993.05 - JAOAC 69, 594 (1986) - JAOAC 77, 411 (1994)	enzymatic determination and high performance liquid chromatography	Authenticity method	I
Juices	malic acid-D	EN12138; IFU Method No 64 (1995)	enzymatic determination	Authenticity method	II
Apple juice	malic acid-D in apple juice	AOAC 995.06	high performance liquid chromatography	Authenticity method	III
Juices	malic acid-L	EN1138 (1994); IFU Method No21(1985)	enzymatic detrermination	Authenticity method	II
Orange juice	naringin and neohesperidin in orange juice	AOAC 999.05 - JAOAC, Vol. 83, No.5 2000, pp1155-1165	high performance liquid chromatography	Authenticity method	I
Juices	pectin	IFU Method No26,1964/1996	precipitation/ photometry	Authenticity method	I
Juices	pH-value	EN 1132(1994); IFU Method No11 (1968/1989)	potentiometry	Quality method	I
Juices	phosphorus/phosphate	EN1136 (1994); IFU Method No50(1983)	photometry	Authenticity method	II
Juices	polyphenolics	collaborative study in progress	high performance liquid chromatography	Authenticity method	IV
Juices	preservatives in fruit juices	IFU Method No 63 (1995)	high performance liquid chromatography	Authenticity method	II
Juices	proline	EN1141 (1994); IFU Method No49 (1983)	photometry	Authenticity method	II
Apple and cranberry juice	quinic, malic & citric in cranberry juice cocktail and apple juice	AOAC 986.13 - JAOAC 69, 594(1986)	high performance liquid chromatography	Authenticity method	III
Juices	recoverable oil	AOAC 968.20; IFU Method No 45b	distillation and titration Scott method	Quality method	I
Juices	relative density	EN1131(1993); IFU Method No 1 (1989) & IFU Method No General sheet,1971	pycnometry	Quality method	I
Juices	relative density	IFU Method No 1A	densitometry	Quality method	I
Juices	sodium, potassium,calcium, magnesium	EN 1134 (1994); IFU Method No33 (1984)	atomic absorption spectroscopy	Authenticity method	II
Juices	soluble solids	AOAC 983.17; EN12143 (1996); IFU Method No 8 (1991)	indirect by refractometry	Quality method	I
Juices	sorbitol-D	IFU Method No62,1995	enzymatic determination	Authenticity method	II
Juices	stable carbon isotope ratio in the pulp of fruit juices	ENV13070 (1998); Analytica Chimica Acta 340 (1997)	stable isotope mass spectrometry	Authenticity method	II
Juices	stable carbon isotope ratio of sugars from fruit juices	ENV12140 Analytica Chimica Acta.271 (1993)	stable isotope mass spectrometry	Authenticity method	II
Juices	stable hydrogen isotope ratio of water from fruit juices	ENV12142(1997)	stable isotope mass spectrometry	Authenticity method	II
Juices	stable oxygen isotope ratio in fruit juice water	ENV12141(1997)	stable isotope mass spectrometry	Authenticity method	II
Juices	starch	AOAC 925.38; IFU Method No73	enzymatic determination	Quality method	I
Juices	sucrose	EN 12146(1996); IFU Method No56 1985/1998	enzymatic determination	Authenticity method	III
Juices	sucrose	EN 12630; IFU Method No67(1996)	high performance liquid chromatography	Authenticity method	II
Orange juice	sugar -beet derviced syrups in frozen concentrated orange juice •^{18}O measurements in water	AOAC 992.09	oxygen isotope ratio analysis	Authenticity method	I
Juices	sulfates	EN1142 (1994); IFU Method No36(1987)	precipitation / gravimetry	Quality method	II
Grape juice	tartaric acid in grape juice	EN 12137(1997); IFU Method No65 (1995)	high performance liquid chromatography	Authenticity method	I

Commodity	Provision	Method	Principle	Notes	Codex Type
Juices	titratable acids, total	EN 12147 (1995); IFU Method No 3, 1968, AOAC 942.15 B	titrimetry	Quality method	I
Juices	titratable acids, total	AOAC 942.15 A	titration		I
Juices	total dry matter	EN12145(1996); IFU Method No61,1991	gravimetry	Quality method	I
Juices	total nitrogen	EN 12135 (1997); IFU Method No28, 1991	digestion/ titration	Quality method	I
Juices	total solids	AOAC 985.26	gravimetry	Quality method	I
Juices	vitamin C	AOAC 967.22	microfluorometry	Quality method	III
Juices	vitamin C	CEN [insert correct reference]	high performance liquid chromatography	Quality method	II

Commodity	Provision	Method	Principle	Notes	Codex Type
Juices	acetic acid	EN 12632; IFU Method No66 (1996)	enzymatic determination	Quality method	II
Juices	alcohol (ethanol)	IFU Method No52,1983/1996	enzymatic determination	Quality method	II
Juices	anthocyanins	IFU Method No71 (1998)	high performance liquid chromatography	Authenticity method	I
Juices	ascorbic acid-L	IFU Method No17a (1995)	high performance liquid chromatography	Quality method	II
Juices	ascorbic-L	AOAC 967.21; IFU Method No 17	titration	Quality method	III
Juices	ash in fruit products	AOAC 940.26 - JAOAC 23,314(1940); EN1135(1994); IFU Method No9 (1989)	gravimetry	Authenticity method	I
Juices	carotenoid, total/ individual groups	EN 12136 (1997); IFU Method No59,1991	precipitation/ fractionation	Authenticity method	I
Juices	centrifugable pulp	EN12134; IFU Method No60,1991/1998	centrifugation/% value	Quality method	I
Juices	chloride (expressed as sodium chloride)	EN12133; IFU Method No 37, 1968	potentiometry	Quality method	II
Juices	chloride	AOAC 971.27 (Codex general method)	potentiometry	Quality method	III
Juices	citric acid	AOAC 986.13 - JAOAC 69, 594 (1986) - JAOAC 77, 411 (1994)	high performance liquid chromatography	Authenticity method	III
Juices	citric acid	EN 1137; IFU Method No22,1985	enzymatic determination	Authenticity method	II
Juices	essential oils	AOAC 968.20; IFU 45b	(Scott) distillation, titration	Quality method	I
Juices	fermentability	IFU Method No 18, 1974	microbiology	Quality method	I
Juices	formol number	EN 1133 (1994); IFU Method No30(1984)	potentiometry	Authenicity method	I
Juices	free amino acids	EN 12742; IFU Method No57,1989	column chromatography/ spectrophotometry	Authenicity method	II
Juices	fumaric acid	IFU Method No72 (1998)	high performance liquid chromatography	Quality method	II
Juices	glucose, fructose, sorbitol	EN 12630; IFU Method No67 (1996)	high performance liquid chromatography	Authenticity method	III
Juices	glucose-D fructose-D	EN 1140; IFU Method No55,1985	enzymatic determination	Authenticity method	II
Juices	gluconic acid	IFU Method No 76 (2001)	enzymatic determination	Quality method	II
Juices	glycerol	IFU Method No77 (2001)	enzymatic determination	Quality method	II
Juices	hesperidin and naringin	EN12148(1996); IFU Method No 58 (1991)	high performance liquid chromatography	Authenticity method	II
Juices	hydroxymethylfurfural	IFU Method No69 (1996)	high performance liquid chromatography	Authenticity method	II
Juices	isocitric acid-D	EN 1139; IFU Method No54,1984	enzymatic determination	Authenticity method	II
Juices	lactic acid-D and L	EN 12631 (1999); IFU Method No53 (1983/1996)	enzymatic determination	Quality method	II
Juices	malic acid-D	EN12138; IFU Method No 64 (1995)	enzymatic determination	Authenticity method	II
Juices	malic acid-L	EN1138 (1994); IFU Method No21(1985)	enzymatic detrermination	Authenticity method	II
Juices	pectin	IFU Method No26,1964/1996	precipitation/ photometry	Authenticity method	I
Juices	pH-value	EN 1132(1994); IFU Method No11 (1968/1989)	potentiometry	Quality method	I
Juices	phosphorus/phosphate	EN1136 (1994); IFU Method No50(1983)	photometry	Authenticity method	II
Juices	polyphenolics	collaborative study in progress	high performance liquid chromatography	Authenticity method	IV
Juices	preservatives in fruit juices	IFU Method No 63 (1995)	high performance liquid chromatography	Authenticity method	II
Juices	proline	EN1141 (1994); IFU Method No49 (1983)	photometry	Authenticity method	II

Commodity	Provision	Method	Principle	Notes	Codex Type
Juices	recoverable oil	AOAC 968.20; IFU Method No 45b	distillation and titration Scott method	Quality method	I
Juices	relative density	EN1131(1993); IFU Method No 1 (1989) & IFU Method No General sheet,1971	pycnometry	Quality method	I
Juices	relative density	IFU Method No 1A	densitometry	Quality method	I
Juices	sodium, potassium,calcium, magnesium	EN 1134 (1994); IFU Method No33 (1984)	atomic absorption spectroscopy	Authenticity method	II
Juices	soluble solids	AOAC 983.17; EN12143 (1996); IFU Method No 8 (1991)	indirect by refractometry	Quality method	I
Juices	sorbitol-D	IFU Method No62,1995	enzymatic determination	Authenticity method	II
Juices	starch	AOAC 925.38; IFU Method No73	enzymatic determination	Quality method	I
Juices	sucrose	EN 12146(1996); IFU Method No56 1985/1998	enzymatic determination	Authenticity method	III
Juices	sucrose	EN 12630; IFU Method No67(1996)	high performance liquid chromatography	Authenticity method	II
Juices	sulfates	EN1142 (1994); IFU Method No36(1987)	precipitation / gravimetry	Quality method	II
Juices	titratable acids, total	EN 12147 (1995); IFU Method No Method No 3, 1968, AOAC 942.15 B	titrimetry	Quality method	I
Juices	titratable acids, total	AOAC 942.15 A	titration		I
Juices	total dry matter	EN12145(1996); IFU Method No61,1991	gravimetry	Quality method	I
Juices	total nitrogen	EN 12135 (1997); IFU Method No28, 1991	digestion/ titration	Quality method	I
Juices	total solids	AOAC 985.26	gravimetry	Quality method	I
Juices	vitamin C	AOAC 967.22	microfluorometry	Quality method	III
Juices	vitamin C	CEN [insert correct reference]	high performance liquid chromatography	Quality method	II