



FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS
ORGANISATION DES NATIONS UNIES POUR L'ALIMENTATION ET L'AGRICULTURE
ORGANIZACION DE LAS NACIONES UNIDAS PARA LA AGRICULTURA Y LA ALIMENTACION
Rome, Viale delle Terme di Caracalla. Cables: FOODAGRI, Rome. Tel. 5797

WORLD HEALTH ORGANIZATION

ORGANISATION MONDIALE DE LA SANTÉ

Genève, Palais des Nations. Câbles: UNISANTÉ, Genève. Tél. 33 10 00

Item 4 of
Provisional Agenda

ALINORM 64/22
April 1964

JOINT FAO/WHO PROGRAM ON FOOD STANDARDS

CODEX ALIMENTARIUS COMMISSION

Second Session, Geneva, 28 September - 7 October 1964

PROGRESS REPORT OF THE EXPERT COMMITTEE ON SUGARS

Introduction

The Codex Expert Committee on Sugars held its first meeting from 3 to 5 March 1964 in London under the chairmanship of Mr. G. O. Lacey of the United Kingdom. It met at the request of the Joint FAO/WHO Codex Alimentarius Commission to prepare international standards for carbohydrate sweetening matters. The meeting was attended by 28 delegates and observers, from 10 governments and 4 international organisations. A list of those participating is attached at Appendix I.

The terms of reference for the Committee's work were laid down by the Codex Alimentarius Commission in the Report of its first session (paragraph 62). Guidelines for Codex Expert Committees were also laid down, in paragraphs 15 and 16 of the Report.

The Committee had before it a paper prepared by the United Kingdom of suggested draft standards for a range of carbohydrate sweeteners. Comments on this paper submitted by the Government of Canada, which was unable to be represented at the meeting, were communicated to the Committee.

After a general discussion of the problem of drawing up international standards for sugars the Committee adopted the procedure recommended by the Joint FAO/WHO Codex Alimentarius Commission - to draw up a list of priorities among the products and to consider the need for standards for wholesale and retail trading, taking full account of health considerations. The Committee agreed to exclude from consideration the numerous intermediate products of the sugar manufacturing and refining processes which were not used either by other industrial users or by direct consumers, and also, at its first meeting, those products in which the volume of international trade was small, such as maple sugars and maple syrups. The Committee decided to include in its consideration the following products :

White Sugar
Powdered Sugar (Icing Sugar)
Soft Sugars and Brown Sugars
Liquid Sugar
Golden Syrup
Treacle
Invert Sugar
Glucose Syrup
Dried Glucose Syrup
Starch Sugar
Dextrose
Lactose
Fructose

Health Aspects of Sugar

The Committee decided to consider the health aspects of these products first and then to go on to consider criteria of quality.

In its consideration of the health aspects the Committee discussed limits for the content of sulphur dioxide, of arsenic, of lead and of other harmful metals in the sugars, as well as microbiological criteria for pathogenic and coliform organisms, and the need for a Filth Test concerned with rodent hairs, excreta and insect fragments.

The Committee tentatively agreed on maximum limits for the sulphur dioxide content of each product considered. In doing this it paid full attention to the health protection of the consumer and to the technological needs of manufacturers. The Committee felt however that before the tentative limits proposed could be finalised more information was required on the technological need for sulphur dioxide in all varieties of carbohydrate sweeteners from different parts of the world, and requested governments to provide information on this point.

The Committee also agreed on maximum limits for the arsenic and lead contents of each product considered. The Committee decided that it was not necessary to prescribe special limits for selenium and antimony, as proposed by the Australian delegation, since they did not normally occur in sugars.

The Committee considered the problems of the tests for pathogenic and coliform organisms and of the Filth Tests. The Committee decided to refer these problems to the Codex Expert Committee on Hygiene as being of general application to all foodstuffs. It was agreed to recommend to the Hygiene Committee that it should consider the following as the desirable standards for all carbohydrate sweeteners :

Microbiological criteria :

All carbohydrate sweeteners should be free from pathogenic organisms. Coliform organisms should not be present in 100 grams of any carbohydrate sweetener.

Filth Test

Rodent hairs and excreta should be absent in 200 grams of any carbohydrate sweetener.

Insect fragments should be absent in 200 grams of any carbohydrate sweetener.

The Committee felt that the Codex Expert Committees on Hygiene and on Methods of Analysis would wish to pay special attention to the methods of analysis required for these tests.

Sampling

The Committee briefly discussed the problems of sampling sugars for the determination for microbiological criteria and the Filth Test. The Committee recommended that the Codex Alimentarius Commission should examine and deal with this problem in the general study of sampling which it was carrying out in conjunction with the International Organization for Standardization.

Quality Criteria

The Committee then turned its attention to drawing up standards of quality for individual products. In the time available at its first meeting the Committee was able to cover the following :

- Extra White Sugar
- White Sugar
- Powdered Sugar (Icing Sugar)
- Soft Sugars and Brown Sugars
- Glucose Syrup
- Dried Glucose Syrup
- Dextrose Monohydrate
- Dextrose Anhydrous

In drawing up the standards of quality for these products the Committee decided on the criteria for which values should be specified for each product, and then prescribed the quantitative limits for those criteria. (See Appendix II)

Nomenclature

The Committee discussed the nomenclature of sugars, and agreed that, at this stage, the titles given in the specifications were for the purpose of adequate identification and should not be regarded as trade descriptions

prescribed for use on labels. On glucose syrup, however, the Committee decided to make a specific recommendation for a uniform international nomenclature (see Sheet No. 5 at Appendix II).

Methods of Analysis

The Committee agreed that it was essential that an internationally accepted method of analysis should be used for each determination. The Committee was informed that the International Commission on Uniform Methods of Sugar Analysis (ICUMSA) which had meetings every four years had discussed analytical procedure in great detail and had adopted standard or tentative methods for most determinations used in sugar analysis. The Committee recommended the Codex Expert Committee on Methods of Analysis to accept any ICUMSA method adopted as a standard method of determination for sugar analysis but to leave freedom for the individual analyst in the determination of impurities such as arsenic and lead.

The Committee felt there was a great need for international agreement on the methods of measuring colour, including turbidity, and extraneous insoluble matter and expressed the hope that ICUMSA would soon be able to bring its work on these subjects to a definite conclusion. The Committee was also informed that Technical Committee No. 93 of the International Organization for Standardization was preparing standard methods of analysis for starch conversion products, and recommended to the Codex Expert Committee on Methods of Analysis that its work should be taken into consideration.

Submission of Standards to Codex Alimentarius Commission

The Committee decided that its report, with the completed standards for individual products as attached at Appendix II, should be submitted to the Codex Alimentarius Commission for consideration at its next meeting. It decided that the standards for Extra White Sugar, White Sugar, Powdered Sugar (icing sugar) and Soft Sugars and Brown Sugars should be submitted to the Commission for consideration as trading standards, and the standards for Glucose Syrup, Dried Glucose Syrup, Dextrose Monohydrate, and Dextrose Anhydrous should be submitted for consideration as minimum platform standards.

Further Meetings

The Committee decided that it should hold a further meeting, possibly in November 1964, at which it would discuss standards for the sugars not covered at its first meeting. It also agreed to discuss at this meeting a proposal by the United States that the Committee should adopt the following general policy statement :

"The carbohydrate sweeteners meeting the definitions and standards developed by the committee are wholesome, nutritive foodstuffs which should be permitted as products and ingredients of products in international trade. Therefore, the choice of type and amount of the various sweeteners used in processed foods should be left to the discretion of the user."

APPENDIX I

EXPERT COMMITTEE ON SUGARSLIST OF PARTICIPATING DELEGATES AND OBSERVERSLondon 3-5 March 1964

<u>Chairman</u>	Mr. G. O. Lace
Australia	Mr. M. McAully (Delegate) Acting Agent-General for Queensland Queensland House 409 Strand London W.C.2
	Mr. B. Dowling (Adviser) Colonial Sugar Refining Co.Ltd. Plantation House Mincing Lane London E.C.3
Belgium	Monsieur G. V. Art (Delegate) Inspecteur en chef-directeur Ministere de la Santé Publique et de la Famille 60 rue Ravenstein Brussels
Denmark	Mr. V. Dalby Pedersen (Delegate) Assistant Director De danske Sukkerfabrikker A/S Langebrogade 5 Copenhagen
Federal Republic of Germany	Dr. H. P. Mollenhauer (Observer) Food Chemist Bad Godesberg Moltke - Strasse 54 Gesundheits - Ministerium
Netherlands	Dr. G. F. Wilmink (Delegate) Direction of Public Health Noordeinde 35 The Hague
	Dr. C. Nieman (Adviser) 172 Joh. Verhulststraat Amsterdam
	Dr. M. Verhaart (Adviser) Heuvelbrink 85 Breda

Poland

Mr. J. Rutkowski (Delegate)
Rolimpex - Entreprise
Nationale de Commerce Exterieur
Warsaw

Mr. S. Wolosiecki (Adviser)
Association de l'Industrie Sucriere
Warsaw

South Africa

Mr. E. J. Burcher (Observer)
5 Fenchurch Street
London E.C.3

Switzerland

Dr. W. Fivian (Delegate)
Zuckerfabrik + Raffinerie AG
Aarberg (BE)

United Kingdom

Mr. G. O. Kermode (Delegate)
Principal
Food Standards Division
Ministry of Agriculture, Fisheries + Food
Great Westminster House
Horseferry Road
London S.W.1.

Mr. W. M. Shortt (Adviser)
Principal Scientific Officer
Ministry of Agriculture, Fisheries + Food
Great Westminster House
Horseferry Road
London S.W.1.

Miss M. K. Macdonald (Observer)
Assistant Secretary
Scottish Home and Health Department
St. Andrew's House
Edinburgh 1 (Scotland)

Mr. A. M. Stephen (Observer)
Principal
Scottish Home and Health Department
St. Andrew's House
Edinburgh 1 (Scotland)

Mr. A. M. D. Atterson (Adviser)
British Sugar Corporation
Central Laboratory
P.O. Box 35
Wharf Road
Peterborough
Northants.

United Kingdom (cont'd.)

Mr. F. K. E. Imrie (Adviser)
Martineaus Ltd.
Sugar Refineries
Rannock Road
London W.6

Mr. E. G. Muller (Adviser)
Tate + Lyles Refinery Ltd.
Thames Refinery
Silvertown
London E.16

Mr. E. C. Tubb (Adviser)
Tate + Lyles Refinery Ltd.
Thames Refinery
Silvertown
London E.16

Mr. F. Wood (Adviser)
Brown + Polson Ltd.
Claygate House
Esher
Surrey

United States of America

Mr. J. A. Hupfer (Delegate)
Sugar Technologist
Farmer Programs Division
Agricultural Stabilization and
Conservation Service
U.S. Department of Agriculture
Washington, D.C. 20250

Mr. C. Broeg (Adviser)
Vice-President and Technical Director
Sucrest Corporation
120 Wall Street
New York 5, N.Y.

Mr. W. J. Hoover (Adviser)
Administrative Vice-President
Corn Industries Research Federation
1001 Connecticut Avenue N.W.
Washington D.C.

Comité Européen des Fabricants
de Sucre

Monsieur H. de Veyrac (Observer)
General Secretary
Comité Européen des Fabricants de Sucre
30 Rue de Lübeck
Paris 16
France

European Economic Community

Dr. H. Steiger (Observer)
Chef de Division
Direction Générale de l'Agriculture
Commission of the European Economic
Community
12 Avenue de Broqueville
Brussels
Belgium

Food and Agriculture Organization

Mr. F. H. Townshend
Officer in Charge
Food Standards Program
Food and Agriculture Organization
Viale delle Terme di Caracalla
Rome
Italy

International Commission for
Unified Methods of Sugar Analysis

Mr. J. Oldfield (Observer)
British Sugar Corporation
42 Moor Lane Bramcote
Nottingham

Secretariat : Mr. P. E. Pickering)
Dr. K. Solon

Ministry of Agriculture, Fisheries
and Food, Great Westminster House,
Horseferry Road, London S.W.1.

APPENDIX II

EXPERT COMMITTEE ON SUGARS

INDEX

1. Extra White Sugar
2. White Sugar
3. Powdered Sugar (Icing Sugar)
4. Soft Sugars and Brown Sugars
5. Glucose Syrup
6. Dried Glucose Syrup
7. Dextrose Monohydrate
8. Dextrose Anhydrous

1. EXTRA WHITE SUGARDefinition

Extra white sugar is highly purified sucrose (saccharose) in the form of colourless crystals or crystalline masses.

Specification

Polarisation, expressed as sucrose (saccharose)	99.9% min.
Sulphated ash	0.2% max.
Colour (Icumsa units, based on Icumsa method 1 ^A)	15 max.*
Extraneous, insoluble matter	20 p.p.m. max.*
Sulphur dioxide	70 p.p.m. max.
Arsenic	1 p.p.m. max.
Lead	2 p.p.m. max.
Copper	1 p.p.m. max.

* The Committee provisionally accepted these figures and urged ICUMSA to continue its work on these determinations with a view to reaching international agreement on a standard method as soon as possible.

2. WHITE SUGAR

Definition

White sugar is purified sucrose (saccharose) in the form of practically colourless crystals or crystalline masses.

Specification

Polarisation, expressed as sucrose	99.5% min.
Invert sugar	0.2% max.
Sulphated ash	0.04% max.
Moisture	0.1% max.
Colour (Icumsa units, based on Icumsa method 1 ^A)	40 max.*
Extraneous insoluble matter	20 p.p.m. max.*
Sulphur dioxide	70 p.p.m. max.
Arsenic	1 p.p.m. max.
Lead	2 p.p.m. max.
Copper	2 p.p.m. max.

* The Committee provisionally accepted these figures and urged ICUMSA to continue its work on these determinations with a view to reaching international agreement on a standard method as soon as possible.

3. POWDERED SUGAR (ICING SUGAR)Definition

Powdered Sugar (Icing Sugar) is finely pulverised extra white or white sugar, or finely pulverised extra white or white sugar with the addition of an anti-caking agent.

Specification

1. That part of powdered sugar other than the anti-caking agent shall conform in every respect to the criteria specified for white sugar.
2. Powdered sugar may contain starch, in amount not exceeding 5% by weight, provided that no other anti-caking agent is present.
3. Powdered sugar, when starch is not present, may contain one or more inorganic anti-caking agents. The total content of inorganic anti-caking agents shall not exceed %.*
4. The following inorganic anti-caking agents shall be permitted*

* The Committee decided to request the Codex Expert Committee on Additives to prescribe a list of permissible inorganic anti-caking agents and to specify individual limits for the content of each substance in powdered sugar and/or an overall limit for such substances. Delegates suggested that the following substances might be included on the list :

Tri-calcium phosphate
Magnesium carbonate
Magnesium tri-silicate
Sodium-calcium-aluminium silicate
Calcium silicate
Dehydrated silica gel

4. SOFT SUGARS AND BROWN SUGARS

Definition

Soft Sugars and Brown Sugars are products obtained from purified or partially purified sugar syrups and may contain colouring and/or flavouring matter provided both are exclusively derived from and prepared with sugar products.

Specification

Sucrose (saccharose) + invert sugar	88.0% min.
Invert Sugar	6.0% max.
Sulphated ash	3.5% max.
Extraneous, insoluble matter	80 p.p.m. max.
Sulphur dioxide	70 p.p.m.
Arsenic	1 p.p.m.
Lead	2 p.p.m.

5. GLUCOSE SYRUP⁽¹⁾

Definition

Glucose Syrup is a clarified concentrated aqueous solution of D(+) glucose, maltose and other polymers of D(+) glucose other than starch, obtained by controlled hydrolysis of edible starch.

Specification⁽²⁾

Total solids	70% w/w min.
Dextrose equivalent (reducing sugars expressed as dextrose)	25% w/w min. (on dry basis)
Sulphated ash	0.8% w/w max.
Suspended matter	10 p.p.m. max.
Sulphur dioxide	450 p.p.m. max.
Arsenic	1 p.p.m. max.
Lead	2 p.p.m. max.

(1) Nomenclature

These products are known under different names in many parts of the world - for instance corn syrup, starch syrup, liquid glucose. It would seem desirable to reach international agreement on a standard nomenclature and "Glucose Syrup" is suggested for this purpose.

(2) Specification

A wide range of syrups containing varying proportions of D(+) glucose, maltose and other polymers of D(+) glucose are produced according to the user's requirements. Since the actual composition and proportion of components vary widely, only those criteria common to all glucose syrups can be specified.

6. DRIED GLUCOSE SYRUP

Definition

Dried glucose syrup is glucose syrup from which the water has been partially removed.

Specification

Total solids	93% min.
Dextrose equivalent (reducing sugars expressed as dextrose)	25% min. (on dry basis)
Sulphated ash	1% max. (on dry basis)
Extraneous insoluble matter	10 p.p.m. max.
Sulphur dioxide	450 p.p.m. max.
Arsenic	1 p.p.m. max.
Lead	2 p.p.m. max.

7. DEXTROSE MONOHYDRATE

Definition

Dextrose monohydrate is D(+) glucose containing one molecule water of crystallisation, obtained by hydrolysis of edible starch followed by purification and crystallisation.

Specification

Dextrose	99.5% min. (on dry basis)
Moisture	10.0% max.
Sulphated ash	0.25% max. (on dry basis)
Extraneous insoluble matter	20 p.p.m. max.
Sulphur dioxide	70 p.p.m. max.
Arsenic	1 p.p.m. max.
Lead	2 p.p.m. max.
Copper	1 p.p.m. max.

8. DEXTROSE ANHYDROUS

Definition

Dextrose anhydrous is D(+) glucose without water of crystallisation, obtained by hydrolysis of edible starch followed by purification and crystallization.

Specification

Dextrose	99.5% min. (on dry basis)
Moisture	2.0% max.
Sulphated ash	0.25% max. (on dry basis)
Extraneous insoluble matter	20 p.p.m. max.
Sulphur dioxide	70 p.p.m. max.
Arsenic	1 p.p.m. max.
Lead	2 p.p.m. max.
Copper	1 p.p.m. max.