

codex alimentarius commission



FOOD AND AGRICULTURE
ORGANIZATION
OF THE UNITED NATIONS

WORLD
HEALTH
ORGANIZATION



JOINT OFFICE: Viale delle Terme di Caracalla 00100 ROME Tel: 39 06 57051 www.codexalimentarius.net Email: codex@fao.org Facsimile: 39 06 5705 4593

Agenda Item 3

**CX/NFSDU 06/28/3
2006**

JOINT FAO/WHO FOOD STANDARDS PROGRAMME

CODEX COMMITTEE ON NUTRITION AND FOODS FOR SPECIAL DIETARY USES 28th Session

Chiang Mai, Thailand, 30 October - 3 November 2006

GUIDELINES FOR THE USE OF NUTRITION CLAIMS: DRAFT TABLE OF CONDITIONS FOR NUTRIENT CONTENTS (PART B CONTAINING PROVISIONS ON DIETARY FIBRE)

- Comments at Step 6 of the Procedure -

Comments from:

ARGENTINA

AUSTRALIA

CHINA

COSTA RICA

INDIA

MEXICO

PERU

UNITED STATES OF AMERICA

IADSA – International Alliance of Dietary/Food Supplement Associations

ICGMA – International Council of Grocery Manufacturers Associations

IDF – International Dairy Federation

ISDI – International Special Dietary foods Industries

ARGENTINA

With regard to the **DRAFT TABLE OF CONDITIONS FOR DIETARY**

FIBRE, Argentina suggests that the bracketed phrases “[10 % of recommended intake]” and “[20 % of recommended intake]” should be **deleted** because given that the serving will be determined locally by the authorities of each country taking account of its typical characteristics, they need not be included in a general recommendation.

As regards the source, Argentina considers it appropriate to reduce the value of “1.5 g per 100 ml” to “1 g per 100 ml”¹. The argument is based on the cited bibliography and on the fibre content of products in the market, which are supported by international work.

Argentina suggests the removal of the brackets for High Content “[liquid foods: 3 g per 100 ml]”.

Regarding the last paragraph of the section “**RECOMMENDATIONS TO CODEX COMMITTEES USING THIS DEFINITION OF DIETARY FIBRES**”, Argentina believes it is unclear; thus, its inclusion is unnecessary as the definition of fibre specifies that fibre may come from any food matrix, plant origin not being the only possible source.

AUSTRALIA

Table of Conditions for Claims

Australia supports the inclusion of a ‘per serving’ condition dietary fibre claims and proposes criteria of 2g per serving for ‘source’, and 4g per serving for ‘high’ dietary fibre claims. Australia does not support an unquantified criterion ‘per serving’ as this provides no guidance to Member States on appropriate amounts per serving. Australia notes that WHO *Diet, Nutrition and the Prevention of Chronic Diseases*² recommends a minimum dietary fibre (NSP) intake of 20g/day from wholegrain, legume and fruit and vegetable sources to reduce the risk of diabetes.

Australia notes that the 27th Session of CCNFSDU was unable to reach consensus on a quantified gram amount of dietary fibre per serving. In the light of the Committee’s discussion on the variable intakes of dietary fibre among Member States, Australia had suggested an alternative approach, now shown in square brackets, of specified percentages of a nationally determined recommended intake of dietary fibre. We note the concerns of several delegations about this suggestion but believe that if this is not acceptable, the Committee will need to strive to agree on quantified amounts per serving.

Australia opposes the creation of separate dietary fibre criteria for liquids foods since recent evidence suggests that high population intake of calorific liquids (of any composition) has been linked to the increased risk of obesity. We therefore support the deletion of texts ‘liquid foods: 1.5 g per 100 ml’ and ‘liquid foods: 3g per 100 ml’, currently in square brackets.

Definition

Australia notes that the open square bracket symbol can be deleted.

Australia recommends that the word ‘human’ is inserted before ‘small intestine in the first paragraph of the definition, to improve the clarity of the text. It is also recommended that ‘carbohydrate polymers’ is removed from the bullet points of the definition and placed in the first paragraph, to give greater clarity on how the bullet points apply to carbohydrate polymers.

¹ Archivos Latinoamericanos de Nutrición Vol. 50 N°1 (2000) y Vol. 53 N° 4 (2003) - J.American Diet Association 1992 Feb.92829 175-86.

² WHO (2003) Diet, nutrition and the prevention of chronic diseases. WHO Technical Report Series #916, p77.

Australia therefore recommends that the text for the definition of dietary fibre is modified as follows (changes are marked in bold text):

‘Dietary fibre means carbohydrate polymers¹ with a degree of polymerisation (DP) not lower than 3, which are neither digested nor absorbed in the **human** small intestine. A degree of polymerisation not lower than 3 is intended to exclude mono- and disaccharides; it is not intended to reflect the average DP of a mixture. Dietary fibre consists of **carbohydrate polymers that:**

- occur naturally in **food for human consumption**,
- have been obtained from raw food material by physical, chemical, or enzymatic means, and/or
- are **of synthetic origin.**’

Properties

Australia believes that the listed properties are not generally exhibited by all dietary fibre types and suggests that the introduction to this section be more precisely expressed as ‘*Dietary fibre exhibits one or more of these properties:*’

Methods of Analysis

Australia supports the Table containing the methods of analysis for dietary fibre as proposed in CX/NFSDU 04/3 – Add 1. We caution against referencing a specific edition of the Official Methods of Analysis, as the Codex text will become out of date. Therefore the footnote should be amended to make the list of methods applicable into the future particularly since existing methods, which retain their ID number, are carried over from one edition to the next.

Australia notes the proposal by some delegations to reference the Englyst method in the Table of methods of analysis. Australia reserves its position on this matter until information is provided showing the analysis of total dietary fibre contents across a range of foods by the Englyst method, and how these values compare to those obtained by the AOAC methods for total dietary fibre for the same foods. It is critical that all methods measuring total dietary fibre produce compatible results to ensure that a single set of criteria for dietary fibre content claims apply irrespective of which method of analysis is employed. Without such information, it is not possible to determine whether the Englyst method would produce results compatible with other methods for total dietary fibre listed in the Table.

Australia is aware of estimated daily dietary fibre intakes that differ by as much as 5g/day when expressed as Non Starch Polysaccharides (20g/day) or AOAC total dietary fibre (25g/day)³. Australia does not support the possibility of multiple, method-dependent content claim criteria.

³ WHO (2003) Diet, nutrition and the prevention of chronic diseases. WHO Technical Report Series #916, p58

CHINA

B. NOT LESS THAN	
[10% of recommended intake]/per serving [(liquid foods: 1.5 g per 100ml)]	Delete brackets and keep the text.
[20% of recommended intake]/per serving [(liquid foods: 1.5 g per 100ml)]	Delete brackets and keep the text.
[and recommended intake]	Delete brackets and keep the text.
(DP) not lower than 3 [,	Delete the left bracket.

COSTA RICA

COMPONENT	CLAIM	CONDITIONS
B. Dietary Fibre	Source	NOT LESS THAN 3 g per 100 g or 1.5 g per 100 kcal or <u>[10% of recommended intake] per serving*</u> [(liquid foods: 1,5 g per 100 ml)]
	High or good source	6 g per 100 g or 3 g per 100 kcal or <u>[20% of recommended intake] per serving*</u> [(liquid foods: 3 g per 100 ml)]

* Serving size ~~[and recommended intake]~~ to be determined at national level.

Justification:

Costa Rica is of the opinion that in practice claims regarding the dietary fibre content of a food include statements like "source" or "good source" (in Spanish: "fuente" or "buena fuente"), and that these statements should therefore be taken into consideration in the Spanish version of the text.

As far as conditions for dietary fibre content claims regarding a - solid or liquid - food are concerned, in our opinion they should be made according to the percentage of the recommended intake per serving. When such a condition is used and when it is permitted to determine the serving size as well as the recommended intake at national level, maintaining fixed values for 100 g, 100 ml or 100 kcal would lead to inconsistencies, i.e. the conditions for making these claims would be unclear.

INDIA

India recommends keeping only one value for source and high fiber claims i.e, for source 3g/100g or equivalent, and similarly for high fiber claim 6g/100 g or equivalent.

Delete 1.5g/100 Kcal for source and 3g/100Kcal for high fiber because the value per 100 Kcal will be high for fruits and vegetables and hence this will not reflect a correct picture.

Delete text in square brackets both for 'source' and 'high' fiber claims giving values for liquid foods.

Definition and property of dietary fiber:

Delete the last part i.e. third bullet -"synthetic carbohydrate polymers".

MEXICO

We suggest deleting the square brackets from table B.

We suggest deleting the square brackets from the footnote of the table.

PERU

Peru agrees with the text of the Guidelines.

UNITED STATES OF AMERICA

I. GENERAL COMMENTS

Our comments address:

- Definition and Properties of Dietary Fibre
- Recommendations to Codex Committees Using this Definition of Dietary Fibre
- Methods of Analysis for Dietary Fibre
- Draft Table of Conditions for Dietary Fibre Content Claims

The above topics are currently identified in Appendix III of ALINORM 06/29/26 which is entitled, "Guidelines for the Use of Nutrition Claims: Draft Table of Conditions for Nutrient Contents (Part B) Dietary Fibre (at Step 6 of the Procedure)". It may be helpful to review at the next session the specific charge of the CCNFSDU relative to the above topics and the specific Codex texts in which these recommendations would eventually be placed. This clarification may help the Committee finalize its recommendations on these topics.

Specifically, the United States requests confirmation that the CCNFSDU intends to propose to CCFL that the Definition and Properties of Dietary Fiber replace the existing text in Section 2.7 of the *Codex Guidelines on Nutrition Labelling*, and that the table of conditions for dietary fibre content claims be added to the "Table of Conditions for Nutrient Contents" in the *Guidelines for Use of Nutrition and Health Claims*. As discussed below, the United States also notes the need to clarify the placement of 1) recommendations to Codex Committees using the proposed definition of dietary fibre, and 2) methods of analysis for dietary fibre.

II. SPECIFIC COMMENTS

Definition and Properties of Dietary Fibre

Definition:

The United States notes that the Committee could not come to a conclusion at the last session as to whether footnote 1 should be retained in the definition section or moved to a section on methods of analysis

(ALINORM 06/29/26, para 18). As another option, we propose that the Committee consider placing this text in the section on Recommendations to Codex Committees Using this Definition of Dietary Fibre.

If the Committee decides to retain this text, we propose the following edits:

¹ When derived from a plant origin, dietary fibre may include fractions of lignin and/ or other compounds when associated with polysaccharides in the plant cell walls and if these compounds are quantified by the AOAC **Enzymatic Gravimetric** analytical method for dietary fibre analysis: Fractions of lignin and the other compounds (proteic fractions, phenolic compounds, waxes, saponins, phytates, cutin, phytosterols, etc.) intimately "associated" with plant polysaccharides are often extracted with the polysaccharides in the AOAC 991.43 method. These substances are included in the definition of fibre insofar as they are actually associated with the poly- or oligo-saccharidic fraction of fibre. However, when extracted or even re- introduced into a food containing non digestible polysaccharides, they cannot be defined as dietary fibre. ~~When combined with polysaccharides, these associated substances may provide additional beneficial effects.~~

Rationale:

- We recommend adding “Enzymatic” to refer to the proper name of this method.
- We recommend deleting the last sentence because text about possible beneficial effects of certain substances falls outside the scope of the Definition section. Properties of dietary fiber are addressed in a separate section.

We further suggest that the Committee consider the following edit to the first bullet:

~~Edible~~ carbohydrate polymers naturally occurring in the **edible portions of** food as consumed,

Rationale: We believe the intent is for “edible” to refer to food rather than to carbohydrate polymers.

Editorial comment:

- The square bracket symbol in the first sentence of the Definition section can be deleted.

Properties:

The United States proposes the following edit for clarification:

Dietary fibre generally has **one or more** properties such as:

Recommendations to Codex Committees Using this Definition of Dietary Fibres

The United States proposes that the Committee consider deleting the second bullet or revising it as follows:

~~“The physiological effects listed in the definition~~ **properties of dietary fibre** may vary with the substances present in the foods and the justification for the use of health claims **about specific properties** must accommodate this diversity.

Rationale:

We are uncertain about the intended meaning of this bullet (e.g., what is meant by “the justification ... must accommodate this diversity”). If this bullet is retained, we propose at a minimum the above edits to: 1) use consistent terminology, and 2) clarify that such justification would need to be provided only for health claims about specific properties of dietary fiber, and not for nutrient content claims that do not refer to specific properties.

The United States further notes the need to clarify where these recommendations will be placed (ALINORM 06/29/26, para 22).

Editorial Comment:

If the title for this section on recommendations is retained, the United States suggests that “Dietary Fibres” be changed to “Dietary Fibre” for consistency.

Methods of Analysis for Dietary Fibre

The United States offers the following comments on the methods of analysis section in CX/NFSDU 04/3—Add. 1.

We note that all proposed methods of analysis must have direct pertinence to the Codex Standard to which they are directed (Codex Procedural Manual, 15th ed., p. 73), and that the Codex Secretariat identified the need for further clarification relative to corresponding Codex provisions at the last CCFSDU session (ALINORM 06/29/26, para 20). Accordingly, with regard to the eventual placement of the table on methods of analysis for dietary fiber, the United States requests clarification from the Secretariat as to whether it would be appropriate for the CCFSDU to propose to CCFL that the final table be placed in a new section in the Codex *Guidelines on Nutrition Labelling*, or alternatively, whether there is a need to create a separate Codex standard on general methods of analysis for nutrients (considering for example the format of an existing standard such as the General Methods of Analysis for Contaminants (CODEX STAN 228-2001, Rev. 1, 2004)). Irrespective of the table’s eventual placement, the U.S. proposes that the Committee consider a format that identifies the applicability of the official methods to all foods or a subset, and that the information be presented in a way that it will not soon become out of date.

Draft Table of Conditions for Dietary Fibre Content Claims

Basis for Dietary Fiber Content Claims

The United States continues to support inclusion of serving size as a basis for expressing dietary fiber content claims, and emphasizes the importance that the criteria be based on scientific recommendations for daily dietary fiber intake.

Accordingly, we propose that the Committee consider expressing conditions for dietary fiber claims in a similar manner as the 2001 amendments to the Table of Conditions of Nutrient Contents in the *Guidelines for Use of Nutrition and Health Claims* which specifies conditions for “source” and “high” claims for protein, vitamins and minerals as a percentage of a daily reference value (CAC/GL 23-1997, Rev. 2-2004). Specifically, these guidelines express the conditions as a specified percentage of the Nutrient Reference Value (NRV) per 100 g, per 100 ml, per 100 kcal, or per serving.

This would not only promote consistency with recent approaches, but might also promote transparency in identifying the relationship between the criteria and recommendations for daily dietary fiber intake. In addition, it should obviate the need to update this table if a Nutrient Reference Value for dietary fiber is established or subsequently updated.

Accordingly, we propose that the Committee consider the option of revising the table in Appendix III as follows:

COMPONENT	CLAIM	CONDITIONS
B.		
		NOT LESS THAN
Dietary Fibre	Source	[__% of daily reference value ¹ per 100 g (solids) ___% of daily reference value per 100 ml (liquids) or ___% of daily reference value per 100 kcal or 10% of daily reference value per serving ²]
	High	[__% of daily reference value per 100 g (solids) ___% of daily reference value per 100 ml (liquids) or ___% of daily reference value per 100 kcal or 20% of daily reference value per serving]

¹ A daily reference value may be either a Codex Nutrient Reference Value (that may be established in the future) or a value determined at the national level taking into account additional factors specific to a country or region.

² Serving size to be determined at the national level.

In addition, we request clarification on the status of the planned FAO/WHO expert consultation on carbohydrate requirements, and on how this work may relate to CCNFSDU's consideration of scientific recommendations for daily intake of dietary fiber and to the possible future establishment of a Nutrient Reference Value.

IADSA – International Alliance of Dietary/Food Supplement Associations

The International Alliance of Dietary/Food Supplement Associations (IADSA) notes that dietary fibre has the composition and properties described in the definition in Appendix III of the ALINORM 05/28/26, but only one of these, transit time and bulk, can be measured by the AOAC method. When all these properties are to be claimed, methods capable of measuring them should be used: for example, the Englyst method.

Therefore, in the interests of clarity, the component should be described as *Dietary Fibre (AOAC)* when its presence has been determined by the AOAC method. When measured by the Englyst method, it should be described as *Dietary Fibre (Englyst)*.

It should also be noted that the AOAC method, while convenient for the routine analysis of food for labelling purposes and quality control, does not discriminate between the different components of fibre. The Englyst method is, however, capable of determining separately the various constituents of dietary fibre but is not suitable for routine analysis.

As additional comment, IADSA's opinion is that because the Englyst method is more complicated and less easy to use than the AOAC method, in the interests of harmonisation the AOAC method should be used for labelling purposes until such time as an innovative method that is suitable for general use can be developed.

ICGMA – International Council of Grocery Manufacturers Associations

Draft Table of Conditions for Nutrient Contents

ICGMA supports the position that claims for fiber should include liquid foods in addition to solid foods. ICGMA agrees that the consumption of liquid foods with a significant content of fiber contributes to the overall intake of fiber.

ICGMA wishes to emphasize the importance of providing the option to express dietary fiber claims on a “per serving” basis and believes that claims on a “per serving” basis help consumers understand the information more readily. In view of the highly variable size and energy density of servings for various foods, a specific value cannot be specified per serving. The declaration of nutrient content based on a single standard weight will often not reflect the nutrient levels in amounts commonly consumed. For example, 100 grams of soup and 100 grams of ready-to-eat breakfast cereal are not representative of the amounts consumers typically eat in a meal. For soups, consumers usually eat larger amounts and for breakfast cereals much smaller amounts. ICGMA believes that claims are better understood by consumers when put into context in the manner in which foods are eaten. Standardized servings would need to be established in order to make this approach viable. However, ICGMA agrees that fiber claims should be consistent with the already finalized “Guidelines for Use of Nutrition and Health Claims” which allow claims for protein, vitamins, and minerals based on the percentage of NRV per 100 g (solids), or per 100 ml (liquids), or per 100 kcal or per serving.

Definition and properties of dietary fibre:

The Draft Table of Conditions for Nutrient Contents (Part B) Dietary Fiber defines dietary fiber as

- Edible carbohydrate polymers naturally occurring in the food as consumed,
- carbohydrate polymers, which have been obtained from food raw material by physical, enzymatic or chemical means,.
- synthetic carbohydrate polymers.

The draft conditions also state:

“With the exception of non-digestible edible carbohydrate polymers naturally occurring in foods as consumed where a declaration or claim is made with respect to dietary fibre, a physiological effect should be scientifically demonstrated by clinical studies and other studies as appropriate. “

We are requesting clarification on interpreting these statements.

There are fibers which occur naturally in products but which are obtained from food raw material by physical means, (e.g., wheat bran from milling), which are used as ingredients in, for example, bread or breakfast cereals. The total level of fiber in these foods therefore does not occur naturally in the foods as consumed. For these products, are the draft conditions intended to

- limit a fiber claim to the fiber naturally occurring in the base plant material excluding the fiber in the added wheat bran?
- limit the declaration of fiber content in the nutrient content information to the fiber naturally occurring in the base plant material, even if chemical analysis of the product verifies a total dietary fiber from all ingredients at a level much higher than just the fiber in the base plant material?
- require additional or new clinical studies for a fiber claim for the fiber naturally occurring in the base plant material plus the added wheat bran or just the added wheat bran?

Consider a wheat flour bread that contains added wheat bran, corn bran and rice bran each of which is obtained from its respective grain through the physical process of milling. While corn bran and rice bran occur naturally in their respective grains, neither corn bran nor rice bran occurs naturally in wheat. Are the draft conditions intended to

- limit a fiber claim to the fiber naturally occurring in the wheat flour and added wheat bran and exclude the fiber in the added corn and rice brans?

- limit the declaration of fiber content in the nutrient content information to the fiber naturally occurring in the wheat flour and added wheat bran, even if chemical analysis of the product verifies a total dietary fiber from all ingredients at a level much higher than just the fiber in the base plant material?
- require additional or new clinical studies for a fiber claim for the fiber naturally occurring in the wheat flour and added wheat bran plus the added corn and rice brans, or just the fiber in the added corn and rice brans?

If the requirement to substantiate a claim with clinical and other appropriate studies is limited to synthetic carbohydrate polymers, then the exception is clearer. However, we would request that the Committee consider this point and provide clarification.

ICGMA believes that in certain cases claim statements may be adequately substantiated from the existing literature and would also request that the Committee clarify whether “clinical studies and other studies as appropriate” includes existing literature.

Methods of Analysis for Dietary Fibre

ICGMA believes CCFNSDU should recommend that the Codex Committee on Methods of Analysis and Sampling review the following methods of analysis for adoption in order to support the definition of dietary fiber as those carbohydrate polymers with a DP of 3-10. The *Official Methods of Analysis of AOAC International 18th Edition, 2005* contains five recent final methods for measuring dietary fiber with DP 3-10 that exclude measurements of mono- and disaccharides:

- AOAC 997.08, Fructans in Food Products
- AOAC 999.03, Measurement of Total Fructan in Foods
- AOAC 2000.11, Polydextrose in Foods
- AOAC 2001.02, Determination of trans-Galactooligosaccharides (TGOS) in Selected Food Products
- AOAC 2001.03, Total Dietary Fiber in Foods Containing Resistant Maltodextrin

IDF – International Dairy Federation

IDF recommends that the functional criterion for the definition of dietary fibre that is resistance to digestion and absorption in the human small intestine is sufficient and that there is no need for setting a minimum degree of polymerization (DP). The reasons for this recommendation are as follows:

- The minimum degree of polymerization (DP) is redundant as all digestible saccharides, including the monosaccharides glucose and fructose (DP of 1), the disaccharides sucrose and lactose (DP of 2), and the polysaccharide maltodextrin (DP > 3) are already excluded from the definition by the statement “which are neither digested nor absorbed in the small intestine”
 - The restriction to DP >3 arbitrarily exclude non-digestible disaccharides (DP of 2), which are also resistant to digestion and absorption in the human small intestine, i.e. they also function as dietary fibres. Examples of these disaccharides are found in preparations of galacto-oligosaccharides (GOS). The enzymes of the human small intestine cannot hydrolyse these disaccharides.
 - Current definitions of dietary fibre (e.g. of the AACC⁽¹⁾, FNB⁽²⁾ and others⁽³⁾) do not include any reference to the degree of polymerisation, but include reference to beneficial physiological effects which characterize dietary fibre⁽⁴⁾.
- 1) *"Dietary fibre is the edible parts of plants or analogous carbohydrates that are resistant to digestion and absorption in the human small intestine with complete or partial fermentation in the large intestine. Dietary fibre includes polysaccharides, oligosaccharides, lignin, and associated substances. Dietary fibres promote beneficial physiological effects including laxative effects and/or blood cholesterol attenuation, and/or blood glucose attenuation"* (The definition of dietary fibre. Report of the dietary fibre definition committee on the board of directors of the American Association of Cereal Chemists, January 10, 2001)
 - 2) *"Dietary fibre consists of non digestible carbohydrates and lignin that are intrinsic and intact in plants. Functional fibre consists of isolated, non-digestible carbohydrates and lignin that have beneficial*

physiological effects in humans. Total fibre is the sum of dietary fibre and functional fibre" (Dietary reference intakes for energy, carbohydrates, fibre, fat, protein and amino acids (macronutrients). 7.

Dietary, functional, and total fibre. National Academy of Sciences, USA, 2002)

- 3) *"Dietary fibre is the collective term for a group of substances that are not digested or absorbed in the human small intestines and which have the chemical character of carbohydrates, compounds analogous to carbohydrates, lignin, or substances related to lignin (The Health Council of the Netherlands, Guideline for dietary fibre intake. The Hague: Health Council of the Netherlands, 2006; publication no. 2006/03*
- 4) See e.g. Asp NG (2004) Definition and analysis of dietary fibre in the context of food carbohydrates. In: Dietary fibre. Bio-active carbohydrates for food and feed. (Eds: Van der Kamp JW, Asp NG, Miller Jones J, Schaafsma G); pp 21 – 26. Wageningen Academic Publishers, The Netherlands. “

ISDI – International Special Dietary Foods Industries

1. Table of Conditions for Dietary Fibre Contents

COMPONENT	CLAIM	CONDITIONS	ISDI Rationales
B.			NOT LESS THAN
Dietary Fibre	Source	3 g per 100 g or 1.5 g per 100 kcal (solids) or [10% of recommended intake] per serving* {(liquid foods: 1.5 g per 100 ml)} (liquids)}	<u>Delete</u> [] and () and add “liquids” and “solids” <u>Retain</u> the conditions for liquid form.
	High	6 g per 100 g or 3 g per 100 kcal (solids) or [20% of recommended intake] per serving* {(liquid foods: 3 g per 100 ml)} (liquids)}	<u>Rational</u> : the conditions for liquids are necessary and retaining them is consistent with the Table of GUIDELINES FOR USE OF NUTRITION AND HEALTH CLAIMS CAC/GL 23-1997, Rev. 1-2004. The proposed rewording is also consistent with the table of the guidelines mentioned above. For the <u>detailed justification</u> , see Annex I.

* Serving size [and recommended intake] to be determined at national level.

2. Definition and properties of dietary fibre

ISDI PROPOSAL	JUSTIFICATION
<p>Definition: Dietary fibre means carbohydrate polymers with a degree of polymerisation (DP) not lower than 3, which are neither digested nor absorbed in the small intestine. A degree of polymerisation not lower than 3 is intended to exclude mono- and disaccharides. It is not intended to reflect the average DP of a mixture. Dietary fibre means edible carbohydrates¹, which are neither digested nor absorbed in the human small intestine Dietary fibre consists of one or more of:</p> <ul style="list-style-type: none"> • Edible carbohydrate polymers naturally occurring in the food as consumed, • carbohydrate polymers, which have been obtained from food raw material by physical, enzymatic or chemical means, • synthetic carbohydrate polymers. <p>Properties: Dietary fibre generally has properties such as:</p> <ul style="list-style-type: none"> • Decrease intestinal transit time and increase stools bulk • Fermentable by colonic microflora • Reduce blood total and/or LDL cholesterol levels • Reduce post-prandial blood glucose and /or insulin levels. 	<p><u>Delete</u> the reference to a DP level, <u>reword</u> the sentence and <u>delete</u> the term “polymers”</p> <p><u>Rational:</u> The proposed Codex definition of dietary fibre includes carbohydrate polymers with a degree of polymerisation (DP) not lower than 3, which are neither digested nor absorbed in the small intestine. A DP not lower than 3 is intended to exclude mono- and disaccharides.</p> <p>ISDI suggests to <u>use resistance to digestion and absorption in the human small intestine</u> as the key to dietary fibre instead of the degree of polymerisation, and remove the term polymer for the following reasons:</p> <ul style="list-style-type: none"> • The digestible saccharides, such as the monosaccharides glucose and fructose (DP of 1), the disaccharides sucrose and lactose (DP of 2), and the polysaccharide maltodextrin (DP > 3) are already excluded from the definition by the statement “which are neither digested nor absorbed in the small intestine”. Therefore, in our opinion the use of the term degree of polymerisation is redundant. • The proposed Codex definition would exclude non-digestible disaccharides (DP of 2), which can also be regarded as dietary fibres. Examples of these disaccharides are found in preparations of galacto-oligosaccharides (GOS). These disaccharides cannot be hydrolysed by the enzymes of the human small intestine. • Current definitions of dietary fibre (e.g. of the AACC, FNB and the Dutch Health Council) also do not describe any restrictions concerning the degree of polymerisation. <p>For the <u>detailed justification</u>, see Annex II.</p>

¹⁾ When derived from a plant origin, dietary fibre may include fractions of lignin and/or other compounds when associated with polysaccharides in the plant cell walls and if these compounds are quantified by the AOAC gravimetric analytical method for dietary fibre analysis: Fractions of lignin and the other compounds (proteic fractions, phenolic compounds, waxes, saponins, phytates, cutin, phytosterols, etc.) intimately “associated” with plant polysaccharides are often extracted with the polysaccharides in the AOAC 991.43 method. These substances are included in the definition of fibre insofar as they are actually associated with the poly- or oligosaccharidic fraction of fibre. However, when extracted or even re-introduced into a food containing non digestible polysaccharides, they cannot be defined as dietary fibre. When combined with polysaccharides, these associated substances may provide additional beneficial effects.

Annex I**Detailed explanation and justification to support the preservation of the conditions for liquids forms in the table of Conditions for Dietary Fibre Contents**

Nutritional aspect

At the worldwide level, the intake of the population is clearly deficient with a global fibre intake below the adult dietary recommendations. As the fibres Recommended Daily Allowance (RDA) value is 30 grammes, the data show an average intake of 20 grammes per day in Europe and only 10 to 15 grammes per day in the USA.

Then, from the nutritional point of view, there is a valuable interest increasing the actual global fibre consumption among populations.

The fibres RDA for adults stipulates that 1/3 of the fibres must come from non-soluble type and 2/3 from soluble ones. Knowing that non-soluble part interacts mainly with the gut transit, the soluble type seems to play a wider health role.

Technical aspect

From the technical perspective, only the soluble, non-viscous fibre type could be used in the beverage technology. Liquid food could then answer the need for the quantitatively higher need of fibre.

Safety aspect

Intake of more than 20 grammes per day of fibre could have some negative impact:

- Osmotic effect on the small intestine that could lead to undesirable troubles like diarrheic troubles.
- Quickly fermented in the colon, those fibres could lead to unpleasant feeling (bloating feeling, abdominal pain, etc...).

Conclusion

From these different aspects, it is clear that from the nutritional point of view it is important to promote internationally a higher fibre intake and, in this context, liquid food could play a major role in this task especially for the non-soluble fraction.

The daily intake of fluid foods, and more especially for beverages, is significantly higher than those of solid foods. As an example, high consumption of biscuits is no more than 100 grammes per day while more than one litre could be drink in the case of beverages.

In this context, products that would offer 3 grammes of soluble fibres per 100 ml could lead to undesirable troubles without the associated positive beneficial nutritional aspects.

The suppression of a lower reference portion for fibre (source of) containing liquid food would directly impair the industrial availability of that kind of product on the markets, while international nutritionists tend to promote a higher consumption of fibres.

Annex II

Detailed explanation and justification to support the changes in the definition of dietary fibre

Carbohydrates

Carbohydrates consist of monosaccharides (or monomers) such as glucose, galactose and fructose. The type of monosaccharide and the number of monosaccharides differ for different carbohydrates as can be seen from figure 1. A monosaccharide has just one ring, a disaccharide has two and a polysaccharide has many. The degree of polymerisation (DP) refers to the number of monosaccharides in a carbohydrate, e.g. in figure 1 the disaccharide (sucrose) has a DP of 2 (one fructose unit linked to one glucose unit). If another fructose unit would be added, the DP would be 3.

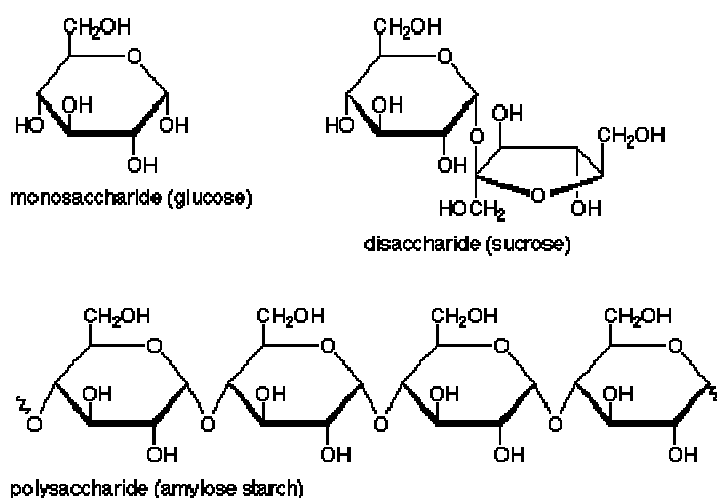


Figure 1. Examples of carbohydrates.

Another important difference between different carbohydrates is that the monosaccharides can be coupled at different positions. Different linkages exist, e.g. beta(1-4), beta(1-6) or beta(1-2) linkages as well as several alpha linkages.

Carbohydrates can be digestible as well as non-digestible. Digestible carbohydrates will be broken down and absorbed in the small intestine, while non-digestible carbohydrates (such as oligosaccharides) will not be broken down in this part of the intestine, and therefore reach the large intestine (colon) in an intact form.

Current definitions on dietary fibre

According to Asp (2004) small intestinal digestibility is a key determinant of the nutritional characteristics of food carbohydrates and should be the main feature in the delimitation between carbohydrates and dietary fibre.

In 2001 the AACC (American Associations of Cereal Chemists) adopted the following definition (Anon, 2001): “Dietary fibre is the edible parts of plants or analogous carbohydrates that are resistant to digestion and absorption in the human small intestine with complete or partial fermentation in the large intestine. Dietary fibre includes polysaccharides, oligosaccharides, lignin, and associated substances. Dietary fibres promote beneficial physiological effects including laxative effects and/or blood cholesterol attenuation, and/or blood glucose attenuation.”

In 2002 the FNB (Food and Nutrition Board of the National Academy of Sciences, USA) adopted the following definitions (Anon, 2002): “Dietary fibre consists of non digestible carbohydrates and lignin that are intrinsic and intact in plants. Functional fibre consists of isolated, non digestible carbohydrates and lignin that have beneficial physiological effects in humans. Total fibre is the sum of dietary fibre and functional fibre”.

The Health Council of the Netherlands (2006) uses the following definition: “*Dietary fibre is the collective term for a group of substances that are not digested or absorbed in the human small intestines and which have the chemical character of carbohydrates, compounds analogous to carbohydrates, lignin, or substances related to lignin.*”

These new definitions are concordant in including resistant oligosaccharides, resistant starch and lignin in dietary fibre and total fibre. Furthermore, these new definitions require that components included are not only indigestible in the small intestine, but have beneficial physiological effects typical for dietary fibre (Asp, 2004). These new definitions do not describe any restrictions concerning degree of polymerisation (DP).

References

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