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Component nomenclature

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Systems of components identification

- INFOODS Tagnames
- COST99/EUROFOODS component identifiers
- EuroFIR components
- national component names
- Chemical Entities of Biological Interest (ChEBI);
- Chemical Abstracts Service (CAS) Registry System;
- IUPAC International Chemical Identifier (InChITM)

→ ChEBI, CAS and IUPAC only treat chemical entities, not composed nutrients such as carbohydrates, fibre, vitamin equivalents etc.

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Need for standardized systems of components identification?

- to document data in same way across countries
- that users know which nutrient is meant, with which definition, mode of expression etc. Especially important if value changes with definition or mode of expression
- to interchange data unambiguously

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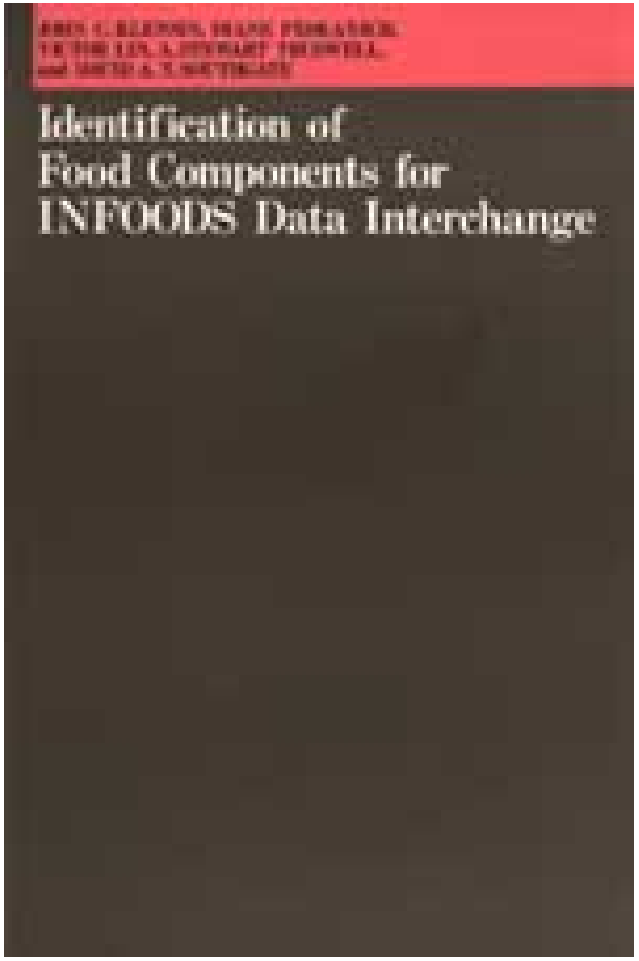
INFOODS Tagnames

Identification of Food Components for INFOODS Data Interchange

J.C. Klensin, D. Feskanich, V. Lin, A.S. Truswell, D.A.T. Southgate. United Nations University, Tokyo, 1989

https://archive.unu.edu/unupress/unupbooks/80734e/80734E00.htm



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Principles for Tagnames food components (1)

- data of different Tagnames cannot be directly compared or combined
- Is a single, unique abbreviation, which is intended for use in interchange,
- use simple roman alphabet in upper case, no symbols (: , .) or formatting (italics, underlining, subscripts or superscripts)
- extensible

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Principles for Tagnames food components (2)

Analytical methods

- one Tagname if different methods provide similar values, e.g. copper (rational method*)
- several Tagnames if analytical result is method dependent; method must be a part of the description, e.g. fibre (empirical methods*)
- for unknown method or multiple empirical methods use hyphen after Tagname, e.g. FIB-

** Source: Principles for the Establishment of Codex Methods of Analysis*

Principles for Tagnames food components (3)

Obsolete concepts:

- "default" unit and denominators, e.g. gram protein per 100 g edible food
- derived Tagnames adding N or P to AAs to indicate mg/g nitrogen (e.g. ALAN) or mg/100 g protein (e.g. ALAP), or F for g/100 g fatty acid
- "keywords" concept to provide additional explanations or description, e.g. on calculations, conversion factors. Now conversion factors have Tagnames

Some examples (1)

- WATER: water
- DEN: density
- ALC: alcohol
- XN: conversion factor nitrogen to protein
- XF: energy conversion factor for fat
- ALA: alanine
- FIB-: fibre; method of determination unknown or mixed

Some examples (2)

- FASAT: fatty acids, total saturated
- CA: calcium
- VITA: vitamin A; calculated by summation of the vitamin A activities of retinol and the active carotenoids– needs more information on definition through keywords
- THIA: thiamin

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Comparison with EuroFIR components

EuroFIR components are:

- based on Tagnames
- propose component grouping
- added links to other component identifier systems
- exclude units, denominator, some method/definition related Tagnames, e.g. equivalents (RE, TE, BCE, NE, monosachh.)
- without keyword approach but additional information is to be provided through the interchange files
- added some components and omitted others
- renamed some existing Tagnames
- for FA use : instead of D, e.g. F4D0 vs. F4:0

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INFOODS Tagnames

Originally
name
unit
denominator
method/definition

name
method

unit

denominator

EuroFIR components

name

method/
definition

unit

denominator

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National component identification

- either based on an international standard or according to national requirements
- not always comparable to existing Tagnames but can be added if relevant

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How to use Tagnames

- In the introduction of printed tables define components and use Tagnames in addition to national language component name and list definitions
- in some cases more than one Tagname should be used but only the main Tagname is indicated in documentation, e.g. FIBTG (Dietary fibre with Prosky method) is mentioned but also values with other methods are included. Ideally, they should be marked with own Tagname
- documentation of value level use specific Tagname

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Nutrients for which differentiation in Tagnames are important

- Fibre
- Carbohydrates
- Fat
- Energy
- Folate

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Major fibre definitions

- Total dietary fibre (FIBTG) by AOAC (most recommended)
- Non-starch polysaccharide (PSACNS) = Englyst fibre
- Southgate fibre (FIBTS)
- By difference: total dietary fibre = 100 - (water + protein + fat + ash + available CHO + alcohol)
- Crude fibre (FIBC) (not recommended)

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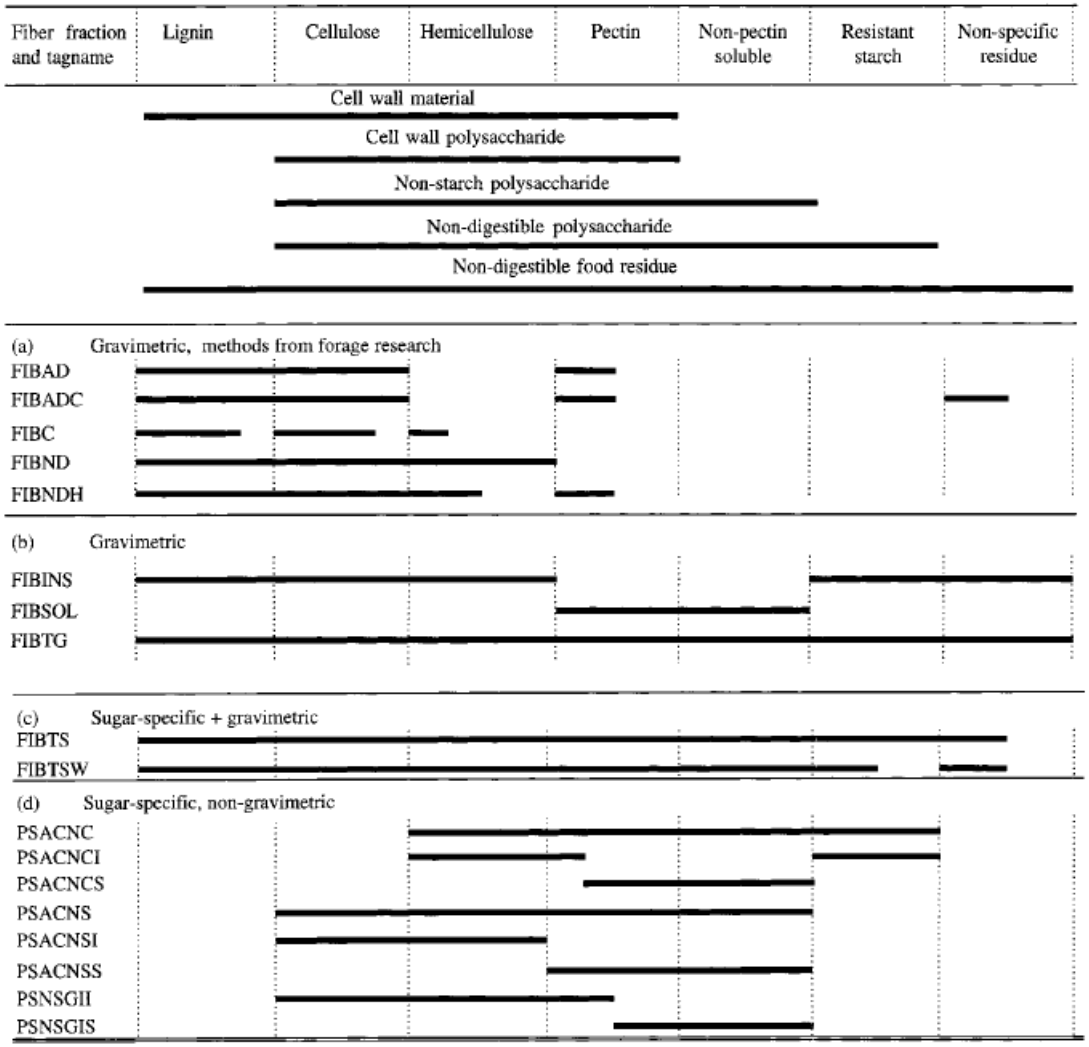
Fibre

- Dietary fibre (AOAC): many, e.g. USDA, NZ, DEN, South Pacific, LATINFOODS, ASEANFOODS, Egypt, Mali
- Dietary fibre (NSP): UK
- Dietary fibre (NSP+lignin): SA
- Dietary fibre (Southgate): UK
- Dietary fibre (acid detergent): NZ, (Lesotho)
- Dietary fibre (neutral detergent): China,
- Crude fibre: Mali, ASEANFOOD

TAGNAMES, DEFINITIONS OF DIETARY FIBER FRACTIONS, METHODS FOR FIBER ANALYSIS: APPROXIMATE RELATIONSHIPS



Source: Monro, J. & Burlingame, B. 1996

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Carbohydrates (CHO)

Total CHO (incl. fibre)

By difference CHOCDF

By summation * CHOCSM

Available CHO = CHO, total (excl. fibre)

By difference CHOAVLDF

By weight * CHOAVL

Monosacch. Equi. * CHOAVLM

* should be analytical data

Carbohydrates

- Available (weight): NZ
- Available by difference: Mali, NZ, LATINFOODS
- Available (monos.): UK, NZ, Mali
- Available (mix): SA
- Total by difference (not recommended): USDA, (UK), Mali, NZ, LATINFOODS, ASEANFOODS, Egypt

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Terms associated with carbohydrate values in food composition tables

Country	Term used	Expended description	Tagname	Standardized value for Wheat bran (dry matter basis)	Standardized value for corn flour (dry matter basis)
USA	Carbohydrate Total	Total carbohydrate by difference (incl. fiber)	<CHOCDF>	75g/100g	85g/100g
UK	Carbohydrate	Available carbohydrate in monosaccharide equivalents	<CHOAVLM>	42g/100g	93g/100g
East Asia	Carbohydrate	Total carbohydrate by difference	<CHOCDF>	75g/100g	85g/100g
Australia	Carbohydrate Total	Available carbohydrate (not in monosaccharide	<CHOAVL>	40g/100g	85g/100g

Fat

- FAT: fat, total
- FATCE: fat, total; derived by analysis using continuous extracting (Soxhlet) Lower that FAT for cereals and if low fat content.
- FATNLEA: total fat by NLEA definition (triglyceride equivalents of fatty acids). Lower than FAT and FATCE because sum of fatty acids only

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Energy
Recommended unit is kJ

- ENERA: energy, gross; determined by direct analysis using bomb calorimetry kJ
- ENERC: energy, total metabolizable; calculated from the energy-producing food components (Carbohydrates, protein, fat, alcohol, fibre).
- Different conversion factors can be applied ➔ to be mentioned, e.g. CODEX, Specific Atwater factors, general Atwater factors, other

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Folates (in mcg)

- FOL: folate, total
- FOLAC: folic acid (for fortification)
- FOLDFE: folate, dietary folate equivalent
- FOLFD: folate food, naturally occuring food folates
- FOLFRE: folate, free
- FOLSUM: Sum of folate vitamers determined by HPLC. Includes mostly tetrahydrofolate, 5-methyltetrahydrofolate, 5-formyltetrahydrofolate, 10-formylfolic acid, 10-formyldihydrofolate and folic acid

For more on food composition, visit www.fao.org/infoods