Dietary Guidelines for Carbohydrates: the European perspective

Nuno Borges
Faculty of Nutrition and Food Sciences
University of Porto, Portugal
nunoborges@fcna.up.pt

Previous guidelines

- Scientific Committee for Food, Nutrient and Energy intakes for the European Community, Reports of the Scientific Committee for Food 31st series, Office for Official Publication of the European Communities, Luxembourg, 1993

The new guidelines

- In 2002, the European Comission “requests EFSA to review the existing advice of the Scientific Committee for Food on Population Reference Intakes for energy, nutrients and other substances with a nutritional or physiological effect in the context of a balanced diet which, when part of an overall healthy lifestyle, contribute to good health through optimal nutrition.”

The new guidelines

- In 2010, the EFSA issued the Guidelines for carbohydrates
- The general recommendation is that carbohydrates should represent between 45% and 60% of the daily energetic value
- No limit set for added sugar
- Fibre daily intake should be 25g, for adults

Carbohydrates

Table 1: Main types of carbohydrates (Adapted from Asp, 1996).

Class (DP *)	Sub-group	Components	Monomers	Digestibility**
Sugars (1-2)	Monosaccharides	Glucose		+
		Galactose		+
		Fructose		+
	Disaccharides	Sucrose	Glu, Fru	+
		Lactose	Glu, Gal	+ (–) ***
		Trehalose	Glu	+
		Maltose	Glu	+
Oligosaccharides(3-9)	Malto-oligo-saccharfides	Maltodextrins	Glu	+
	Other oligo-saccharides	-Galactosides (GOS)	Gal, Glu	–
		Fructo-oligosaccharides (FOS)	Fru, Glu	–
		Polydextrose	Glu	–
		Resistant dextrins	Glu	–
Polyols	Maltitol, sorbitol, xylitol, lactitol			+/–
Polysaccharides (>9)	Starch	Amylose	Glu	+ (–)
		Amylopectin	Glu	+ (–)
		Modified starch	Glu	–
		Resistant starch	Glu	–
		Inulin	Fru	–
	Non-starch poly-saccharides	Cellulose	Glu	–
		Hemicelluloses	Variable	–
		Pectins	Uronic acids	–
		Other hydrocolloids, e.g. gums, mucilages, -glucans	Variable	–
Related substance		Lignin		–

* DP = Degree of polymerisation
**Denotes digestibility in the small intestine: + digestible, + (–) mainly digestible, +/- partly digestible, – non-digestible
***Lactose is poorly digested by individuals with low intestinal lactase activity
Fru = Fructose, Glu = Glucose, Gal = Galactose

The new guidelines

- What kind of information was considered by EFSA, to propose these limits for carbohydrate consumption?

Defining the amount of Carbohydrates

- Mostly, based on scientific papers from many of the member states.
- These papers reported values for nutrient intake in several populations across Europe.
- The methods for evaluating intake were:
  - Food records
  - Food frequency questionaires
  - 24h recall

Defining the amount of Carbohydrates

Table 2: Recommended dietary intakes for adults.

	USA[a] (IoM, 2005)	Nordic Countries (NNR, 2004)	WHO (2003)	Netherlands (GR, 2001 and 2006)	France, (AFSSA, 2001)	Germany, Austria, Switzerland (D-A-CH, 2008)	Eurodiet (2000)	UK (DoH, 1991)
Protein, E%	10-35	10-20	10-15	8-11	8-10	10-11	-	9
Fat, E%	20-35	25-35	15-30	20-40 20-30/35[b]	30-35	30	< 30	33
Carbohydrates, total, E%	45-65	50-60	55-75	40[c]	50-55	> 50	> 55	47[d]
Sugars, E%	< 25[e]	< 10[e]	< 10[f]	-	-		< 4 occasions per day[g]	<10[h]
Dietary fibre, g/day	w: 25 m: 38	25-35	> 25[i]	32-45	25-30	30	> 25	18[j]
g/MJ	3.4	3		3.4		W: 3 M: 2.4	3	-

(a) AMDR: acceptable macronutrient distribution ranges, applies to individuals. AI for dietary fibre
(b) For subjects with BMI >25 or with undesireable weight gain
(c) RDA for digestible carbohydrates
(d) Intrinsic and milk sugars and starch 37 E%
(e) Refined, added sugars include sucrose, fructose, glucose, starch hydrolysates (glucose syrup, high-fructose syrup) and other isolated sugar preparations used as such or added during food preparation and manufacturing
(f) Free sugars, defined as all monosaccharides and disaccharides added to foods, plus sugars naturally present in honey, syrups and fruit juice
(g) Corresponds to an intake of < 10 E%
(h) Non-milk extrinsic sugars
(i) Total dietary fibre from wholegrain cereals, fruit and vegetables, 20 g NSP
(j) Refers to non-starch polysaccharides

The role of pasta

Composite Sample Description	Water grams/100g	Protein grams/100g	Total sugars grams/100g	Starch grams/100g	Available carbohydrate grams/100g	Dietary Fibre AOAC grams/100g	Fat grams/100g
Dried white spaghetti, cooked	64.9	4.4	1.0	30.5	31.5	1.7	0.6
Dried wholewheat spaghetti, cooked	63.7	5.2	<0.1	27.5	27.5	4.2	1.1

The role of pasta

Dietary patterns and 15-y risks of major coronary events, diabetes, and mortality[1–3]

Eric J Brunner, Annhild Mosdøl, Daniel R Witte, Pekka Martikainen, Mai Stafford, Martin J Shipley, and Michael G Marmot

Am J Clin Nutr 2008;87:1414–21.

TABLE 1
Main features of the observed dietary clusters

Cluster	Intake compared with average frequency intakes of foods in the cohort
Unhealthy (n = 2665)	Higher than average consumption of meat and sausages, white bread, fries, and full-cream milk. Average consumption of wine and beer. Very low consumption of fruit and vegetables.
Sweet (n = 1042)	Higher than average consumption of biscuits, cakes, meat, sausages and savory pies, white bread, full-cream milk, butter, and wine and beer. Average intake of fruit and vegetables.
Mediterranean-like (n = 1361)	Higher than average consumption of whole-meal bread, fruit, vegetables, pasta and rice, and wine and beer. Low intake of full-cream milk but high intake of butter. Average consumption of white bread.
Healthy (n = 2663)	Higher than average consumption of whole-meal bread, fruit and vegetables, and polyunsaturated margarine. Average to low consumption of red meat, sweet foods, and wine and beer.

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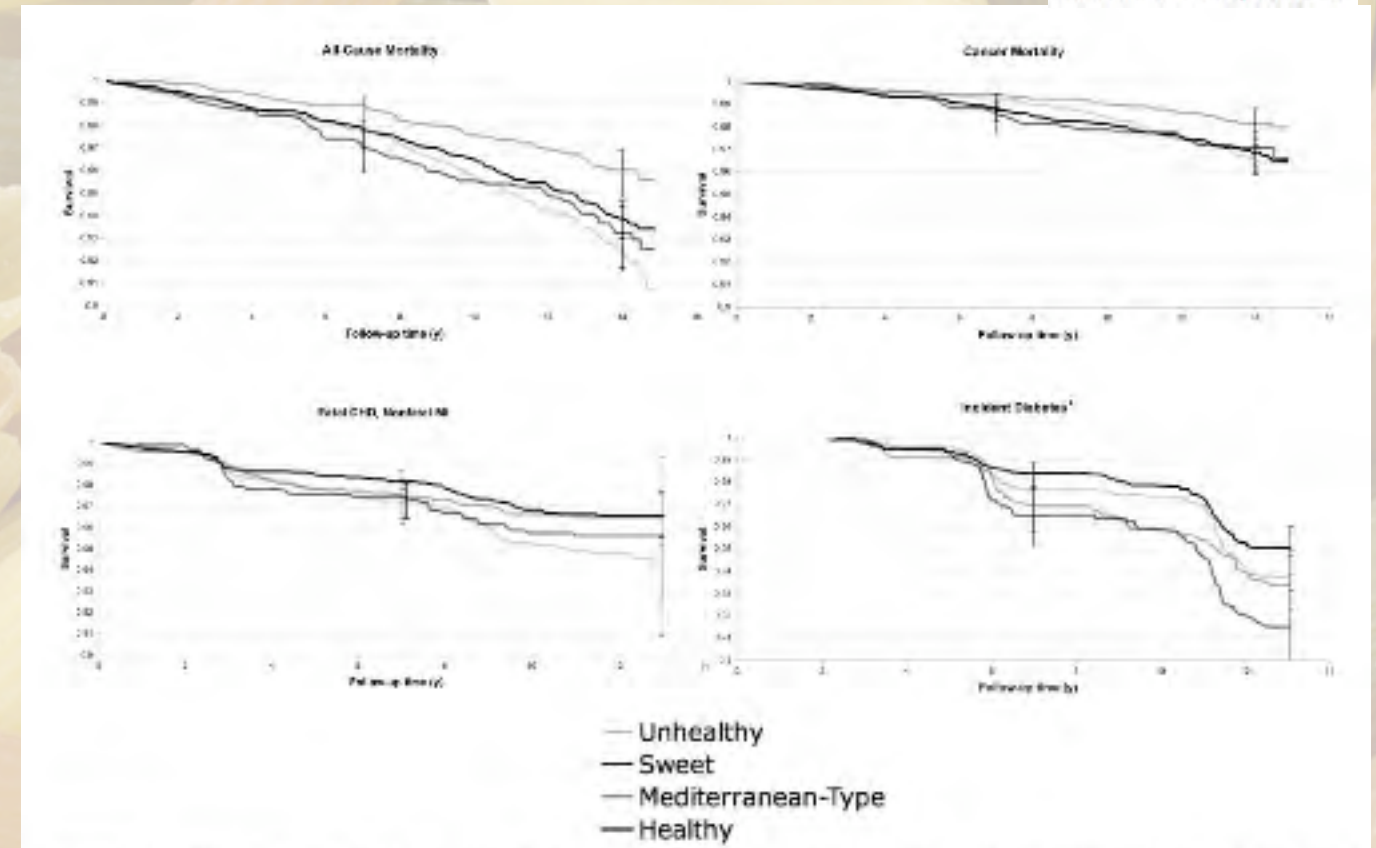

FIGURE 1. Survival and disease-free follow-up according to dietary pattern. Adjusted for age, sex, ethnicity, and energy misreporting. 95% CIs (unadjusted) are shown for each curve. CHD, coronary heart disease; MI, myocardial infarction. *High rates of diabetes incidence were obtained when the participants attended the screening clinic.

O que é?

A Roda dos Alimentos é uma **imagem ou representação gráfica** que ajuda a **escolher e a combinar os alimentos** que deverão fazer parte da **alimentação diária**.

É um símbolo em forma de **círculo** que se divide em **sectoreos de diferentes tamanhos** que se designam por Grupos e que reúnem alimentos com propriedades nutricionais semelhantes.

A Roda dos Alimentos Portuguesa foi criada já em 1977 para a Campanha de Educação Alimentar "Saber comer é saber viver". A evolução dos conhecimentos científicos e as diversas alterações na situação alimentar portuguesa conduziram à necessidade da sua reestruturação.

A **nova Roda dos Alimentos** agora apresentada mantém o seu formato original, pois este é já facilmente identificado e associa-se ao prato vulgarmente utilizado. Por outro lado, e ao contrário da pirâmide, o círculo não hierarquiza os alimentos mas atribui-lhes igual importância.

A **subdivisão de alguns dos anteriores grupos** e o **estabelecimento de porções diárias equivalentes** constituem as principais alterações implementadas neste novo guia.

Como é constituída?

A nova Roda dos Alimentos é composta por **7 grupos de alimentos** de diferentes dimensões, os quais indicam a proporção de peso com que cada um deles deve estar presente na alimentação diária:

Cereais e derivados, tubérculos – 28%
Hortícolas – 23%
Fruta – 20%
Lacticínios – 18%
Carnes, pescado e ovos – 5%
Leguminosas – 4%
Gorduras e óleos – 2%

A **água**, não possuindo um grupo próprio, está também representada em todos eles, pois faz parte da constituição de quase todos os alimentos. Sendo a água imprescindível à vida, é fundamental que se beba em abundância diariamente. As necessidades de água podem variar entre **1,5 e 3 litros** por dia.

Cada um dos grupos apresenta funções e características nutricionais específicas, pelo que todos eles devem estar presentes na alimentação diária, não devendo ser substituídos entre si.

Dentro de cada grupo estão reunidos alimentos nutricionalmente semelhantes, podendo e devendo ser regularmente substituídos uns pelos outros de modo a assegurar a necessária variedade.