

Global dietary whole grain recommendations – a harmonised or multifarious message

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Plan



Development of dietary recommendations



Health benefits of whole grain and wholegrain foods



Definitions of whole grain and wholegrain foods



Dietary whole grain recommendations



Future needs

Dietary Intake Recommendations

Type	Fruit & Vegetables
Generic	Increase your intake of fruit & vegetables
Generic quantitative	Eat 5 portions of fruit and vegetables daily
Specific	Eat a variety of vegetables, especially dark-green, red, orange vegetables, beans & peas (USDA)

Nutrient Intake Recommendations - process

- Recognition of requirement for nutrient
 - Alleviating deficiency; preventing a 'disease'
- Create panel of experts
- Confirmation of benefit of nutrient
 - Systematic and comprehensive literature review
 - Evaluation and ranking of the evidence [after setting fixed quality criteria]

Nutrient Intake Recommendations - process



Quantifying nutrient requirement



Measured against biomarker of adequacy [and toxicity]



Quantifying current nutrient intake



Is there a 'problem' - difference between current intake and estimated requirement?



Making recommendation (yes/no) and how to achieve recommendation – target and suggested foods

'Food' Intake Recommendations - process



Recognition of health benefit of 'food'



Could be relieving deficiency but more likely disease prevention



Create panel of experts



Confirmation of health benefit



Systematic and comprehensive literature review



Evaluation and ranking of the evidence [after setting fixed quality criteria]

'Food' Intake Recommendations - process

- Quantifying 'food' requirement
 - Measured against biomarker of intake [and toxicity]
- Defining the 'food'
- Quantifying intake of the 'food'
 - Is there a 'problem' - difference between current intake and estimated requirement
- Making recommendation (yes/no) and how to achieve recommendation

Nutrient Intake Recommendations - process

UK Scientific Advisory Committee on Nutrition

“Requested by the Department of Health and Food Standards Agency to provide clarification of the relationship between dietary carbohydrates and health and make public health recommendations”

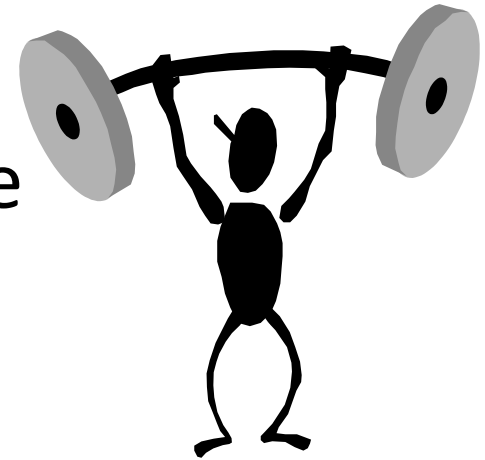
Nutrient Intake Recommendations - process

- To achieve this they need to review:
 - the evidence for a role of dietary carbohydrates in colorectal health in adults (including colorectal cancer, IBS, constipation) and in infancy and childhood;
 - the evidence on dietary carbohydrates and cardio-metabolic health (including cardiovascular disease, insulin resistance, glycaemic response and obesity);
 - the evidence in respect to dietary carbohydrates and oral health.
 - the terminology, classification and definitions of types of carbohydrates in the diet.

Health benefits of consuming whole grains

Strong evidence from observational studies for:

- ↓ Cardiovascular disease risk and incidence
- ↓ T2D risk and incidence
- ↓ Symptoms of metabolic syndrome
- ↓ Risk of some cancers
- ↓ Reduced weight gain, lower BMI
- ↑ Gut health



Health benefits of consuming whole grains



Majority of the evidence for the benefits of whole grain comes from large-scale ‘observational’ studies which have demonstrated associations between disease risk or death from the disease and diet pattern



Supporting evidence from intervention studies is less (but increasing) and more variable

WHICH TYPE OF EVIDENCE SHOULD CARRY GREATER WEIGHT?

Whole Grains – how do they work?

Suggested mechanisms of action:

- Lowered inflammatory status
- Improved insulin response
- Improving vascular function and blood pressure
- Modified blood lipid profiles
- Facilitate weight control (satiety, nutrient dilution)
- Improve nutrient content of the diet – fibre, vitamins, minerals
- Deliver bioactive components to the gut – prebiotics, phytochemicals, antioxidants

Whole Grains – how do they work?

- Not likely that a ‘single’ process is affected, more likely to be a combination of several
- Processes affected and extent of effect are different for each grain
 - NOT ALL GRAINS ARE EQUAL

Whole Grain Definition

- Consideration given to:
 - Degree of processing necessary to produce a product safe for consumption
 - Degree of processing necessary for food manufacturers to produce foods with required sensory and shelf-life properties
 - Can a single definition cover all grains?
 - Should other ‘seeds’ be included – e.g. soya?
- Considered by AACCC International task force



Whole Grain Definition

Developed by the HEALTHGRAIN Consortium

- *Whole grains shall consist of the intact, ground, cracked or flaked kernel after the removal of inedible parts such as the hull and husk. The principal anatomical components - the starchy endosperm, germ and bran - are present in the same relative proportions as they exist in the intact kernel.*
- *Small losses of components - i.e. less than 2% of the grain/10% of the bran - that occur through processing methods consistent with safety and quality are allowed.*

Cereal grains included in the whole grain definition

Wheat, including spelt, emmer, faro, einkorn, Kamut, Durums

Rice

Barley, including hull-less or naked barley but not pearled

Oats, including hull-less or naked oats

Rye

Maize (corn)

Millets

Minor Grains: Sorghum, Teff (Tef), Triticale, Canary seed, Job's Tears, Fonio, Black fonio, Asian millet, Wild Rice

Pseudo Cereals: Amaranth, Buckwheat, Tartar buckwheat, Quinoa

Wholegrain Food Definition

Consensus definitions do not exist e.g.

- US - Wholegrain foods must contain >51% by weight wholegrain ingredients and at least 8g WG per serving
- Sweden, Denmark, Norway - Calculated on dry matter, the whole grains shall be the specified percentage or more of the total grains, for each category:
 - 100% for flour, meal, grains
 - 50% for crispbread, porridge, pasta (unfilled)
 - 25% for bread, sandwiches, wraps
 - 15% for pizzas, pierogis, other savoury pies
- Australia - ...only if the food has at least 10% wholegrain content or 4.8g whole grains “per serve”
- UK - IGD Working Group ...foods should contain a minimum level of 8g whole grain per serving (based on final batch load proportions); Whole grains must be given as QUID on packaging

Survey of current dietary intake recommendations

Global search for whole grain dietary intake recommendations:

- National health agency guidelines, published literature, web sites, direct inquiry
- Assess presence/absence, rationale and diversity in emphasis and wording
 - Primary – clear emphasis on whole grain
 - Secondary – linked to cereal, fiber, carbohydrate

Dietary Intake Recommendations

Type	Fruit & vegetables	Whole grains
Generic	Increase your intake of fruit & vegetables	Let your grains be whole; use wholegrain products
Generic quantitative	Eat 5 portions of fruit and vegetables daily	Consume at least half of all grains as whole grain; eat 2-3 servings of whole grains daily
Specific	Eat a variety of vegetables, especially dark-green, red, orange vegetables, beans & peas (USDA)	Eat 75g of whole grain per day per 10MJ energy; Eat a variety of whole grains, emphasizing grains high in fibre (wheat, rye, oats, barley)

Rationale for current dietary intake recommendations

Mostly based on reported health benefits, in many incidences linked to dietary fibre:

Ecuador: “....25g dietary fiber per day, eat 3 portion per day of whole grain products (rice, pasta, cookies bread)”

Rationale – low intake of dietary fiber causes constipation and high cholesterol levels

Rationale for current dietary intake recommendations

Health Ministry of Malaysia: “..consume at least four servings of cereal foods per day. Choose at least half of your grain products from whole grain. Choose cereal products that are high in fibre, low in fat sugar and salt.”

Rationale – The consumption in their natural form with the presence of bran and germ could lower the risk of chronic diseases. It plays an important role in decreasing the risks of many disorders such as diabetes, CVD, constipation, diverticulosis and obesity.

Summary – Recommendations



Dietary recommendations exist in 50% of countries surveyed



Recommendations are varied, and in most countries non-specific





Rationales for inclusion of dietary recommendations vary between countries

WHY?

Why are recommendations so different between countries?

 Different interpretation of strength of the scientific evidence for benefit

 Whole grain vs bran vs fiber vs other nutrient components; different grain types

 No globally agreed definitions for whole grain and wholegrain foods

 No globally agreed levels of intake required

Summary – Issues for the future



Harmonisation of definitions for ‘whole grain’ and ‘wholegrain foods’ is required



Levels of intake needed to provide benefit must be clearly established



More evidence from intervention studies is required to confirm/quantify benefit [larger, better controlled etc.]

Summary – Issues for the future



Should intervention studies be focussed on single grains [may differ by country depending on cultural diet patterns]



How should recommendations be communicated?

Harmonisation of dietary recommendations might be possible if these issues can be addressed

EAT MORE WHOLE GRAINS !

