Wholegrain foods and legumes in health and nutrition – in rural communities

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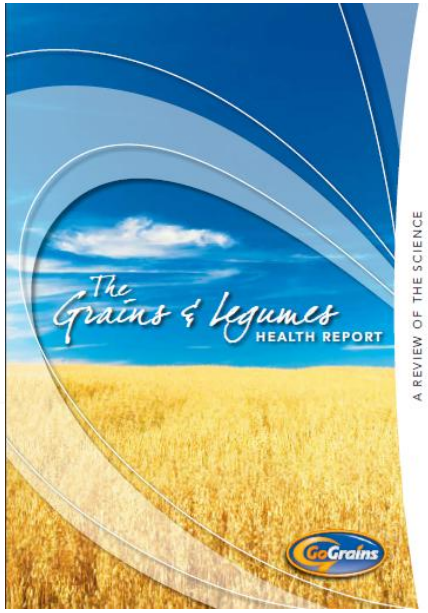
Objective

- This presentation is based on "The Grains & Legumes Health Report – A Review"[1], co authored by Assoc. Prof Peter Williams from the University of Wollongong.

- To bring together and examine the extensive body of literature published over the past 15 years exploring the scientific evidence for the role of grain-based foods and legumes in the diet, as well the role of grain-based foods (particularly wholegrains) and legumes in health and protection disease.

- Includes results from 2009 Go Grains Consumption Survey.



Background Information

- **Grains** (cereals), are the edible seeds of plants belonging to the cereal grass family
- **Wheat, rice, oats**, rye, barley, corn, triticale, sourghum and millet
- **Pseudocereals -** amaranth, buckwheat, quinoa
- Grains are a staple food around the world
- Cereal grains are high in carbohydrates, low in fat, good sources of protein and provide varying amounts of fibre, vitamins and minerals
- NNS 95' – breads and cereals were the leading source of fibre, thiamin, magnesium and iron and the second most important source of folate, niacin, zinc and protein

Wholegrains

- Grains need to be processed to make them suitable to eat.

- Milling helps release valuable nutrients components concentrated within the outer layers of the grain

- Wholegrain Definition (FSC) "the intact grain or the dehulled, ground, milled, cracked or flaked grain where the constituents – endosperm, germ and bran – are present in such proportions that represent the typical ratio of those fractions occurring in the whole cereal, and includes wholemeal.[2]

- Wholegrains contain many functional components that work both alone and in synergy to promote health and offer significant protection against many diseases.

Key Findings - Wholegrains

- Eating 2-3[#] serves of wholegrain foods a day is associated with a reduced risk of developing chronic disease – including cardiovascular disease[3], type 2 diabetes[4], and certain cancers[5] – by 20-30%.

- Eating 2-4[#] serves of wholegrain foods a day can reduce the risk of heart disease by as much as 40% - equal to the effect of statin drugs[6,7].

- Wholegrain foods can help to lower blood pressure.[8]

- A diet high in wholegrains is associated with a lower body mass index (BMI,) waist circumference, and risk of being overweight; it can also help to reduce weight gain and assist in weight loss as part of a kilojoule controlled diet.[9]

[#] US serve sizes, (eg. one serve is equivalent to one slice of bread)

Key Findings - Wholegrains

- Long-term dietary intervention studies confirm that diets incorporating frequent consumption of wholegrain foods can reduce the progression from impaired glucose tolerance to type 2 diabetes by up to 58%.[10]

- Wholegrain foods are associated with lower cancer risk. The evidence suggests wholegrain cereal foods and fibre rich cereal foods may protect against colorectal cancers, gastric cancers and possibly also breast, endometrial and prostate cancers.[11-14, 15]

- There is emerging science about the benefits of wholegrain consumption for prevention of periodontal disease,[16] and asthma[17], as well as suggestive evidence for improvements in mood and cognitive function.[18-20]

- The antioxidant capacity of many wholegrain foods is equal to, or greater than, that of fruits and vegetables.[21]

Dietary Recommendations

- Australian dietary guidelines recommend Australians eat at least four serves of grain based foods each day, 'preferably wholegrain'[15]

- What is a serve of grain-based food?
  - 2 slices of bread
  - 1 cup cooked rice, noodles, pasta
  - 1 cup of breakfast cereal or 2 wheat flake biscuits
  - ½ cup muesli
  - 1 cup of porridge

- In 2008, Go Grains Health & Nutrition in collaboration with the International Life Sciences Institute (ILSI) established an achievable, evidence-based Daily Target Intake (DTI) for wholegrains of 48g a day[22,23].

- The 48g DTI can be found on the labels of many breads, breakfast cereals, crispbreads and snacks

Wholegrain Foods

- No Australian definition for 'wholegrain food'
- Wholegrain content varies across food categories, brands and recipe formulation
- Commonly available foods containing wholegrains (approx amounts):

Food	Serve Size	Wholegrains (g)
Wholemeal bread	2 slices	30-40
Multi-grain bread	2 slices	5-30
Wheat-flake breakfast biscuits	2 biscuits	30
Wholegrain breakfast cereal	30-45g serve	15-30
Porridge	1/3 cup raw rolled oats	30
Brown rice	1 cup cooked	65
Wholegrain pasta	1 cup cooked	55-65
Wholegrain crispbreads	2-4 slices	20-35
Popcorn (plain)	20g	15
Muesli bar	1 bar	10-15

Health Care Savings

Table 1: Potential health expenditure cost savings with 3 serves of wholegrains each day

Disease Group	2001 Annual Healthcare Expenditure ($million)	Percent Related to Diet	20% Annual Saving ($million)
Cancers	2,918	40% (prostate, colorectal, breast only)	233.3
Cardiovascular	5,479	40% (CHD, stroke)	438.3
Diabetes	812	84% (type 2)	136.4
Endocrine, nutritional, metabolic	1,587	45% (obesity)	142.8
Total in 2001			**950.8**
Adjusted for 3.1% annual inflation in health care expenditure to 2009			**1,213.8**

Based on a conservative 20% reduction in each of these major diseases, health expenditure cost savings could potentially be over $1.2 billion annually.

Legumes

- Also known as pulses, include all forms of beans and peas
- Butter beans, haricot (navy beans), cannellini beans, red kidney beans, adzuki beans, black eyed-peas, soybeans, mung beans, lentils, split peas, peanuts and chickpeas.
- Provide a range of essential nutrients including protein, low glycaemic carbohydrates, dietary fibre, vitamins, minerals and phytochemicals.
- Are higher in protein than most other plant foods

Key Findings - Legumes

- Low intake of legumes in most free-living populations.
- Epidemiological studies consistently show that eating legumes can help reduce the risk of cardiovascular disease, diabetes and obesity as well as improve gut health.[24]
- Legume consumption four or more times a week (compared with less than once a week) was associated with a 22% lower risk of coronary heart disease and 11% lower risk of cardiovascular disease.[25]
- Every 20g increase in legume intake was associated with a 7-8% lower risk of death in older people in a 7 year study of five cohorts in Japan, Sweden, Greece and Australia.[26]
- The World Cancer Research Fund and the American Institute for Cancer Research recommend people "eat relatively unprocessed cereals (grains) and/or pulses (legumes) with every meal."[27]

Consumption Data

- Go Grains Consumption Study, 2009
- n=1718, nationally representative sample, aged 5-80yrs
- 2 day food diary (self reported), followed by an online survey
- Data for 63 foods collected

Results:

- Australians on average consumed just over 5 serves of grain-based foods per day. Almost 25% of this was made up of non-core grain-based foods such as cakes, biscuits, pastries, hamburgers, hot dogs, pies, sausage rolls and other takeaway foods

- When adjusted for non-core grain-based foods, the average serves per day = 4.08, which is the minimum number of serves recommended by Australian dietary guidelines.

- Rural communities significantly less than total sample, with 3.77 serves per day.

Consumption Data

- Australians on average consumed less than one and a half of their grain-food serves from wholegrains each day, this represents barely one third of their daily food intake coming from wholegrains. This figure was even less for rural communities, but not significantly different.

- Legumes were consumed by only 23% of all Australians. Baked beans were the main contributor to legume intake, particularly in rural communities, where more baked beans were eaten compared to the total sample.

Grains Consumption Data

Conditions – currently have	Total	Metro	Regional
Base: Total Sample	**1233**	**871**	**362**
Coeliac disease	2%	2%	1%
Diabetes	7%	7%	8%
Digestion & stomach disorders	8%	8%	10%
High cholesterol	17%	16%	20%
High blood pressure	15%	13%	19%
Irritable bowel syndrome	8%	7%	9%
Are you overweight?	**30%**	**18%**	**36%***
Other	5%	4%	6%
None of the above	48%	52%	38%

The Challenge: Increasing Consumption

Barriers to wholegrain and legume consumption:

- Traditional preferences for refined products
- Limited availability of wholegrain foods in supermarkets and foodservice settings
- Unfamiliarity with cooking and preparation techniques
- Confusion in product labelling

Solutions:

- Continued education and consistent wholegrain messaging on pack
- School classrooms and school canteens

  Eg. Go 4 Grains Kids Design Challenge
- Go Grains brochures (www.gograins.com.au) or order free bulk hardcopies
- Health expos, field days, growers markets, community nutrition initiatives
- E-news

Take Home Message

- There is an extensive body of scientific findings that establish the ability of grains, particularly wholegrains and legumes to lower the risk of cardiovascular disease, type 2 diabetes, certain cancers and obesity by at least 20%.

- People in rural communities have a significantly lower intake of grain-based foods than the national average, with a trend towards lower wholegrain consumption.

- **Need to encourage increased consumption of grain-based foods, particularly wholegrains, and legumes.**

Further Information
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