



**GLYCEMIC  
INDEX  
FOUNDATION**  
*Making healthy choices easy*

Ms Kathy Usic CEO Glycemic Index Foundation  
Dr Alan Barclay Chief Scientific Officer



Presentation to the MOH January 2021

# Glycemic Index Foundation



➤ A **not-for-profit** health promotion charity established in 2001 by University of Sydney, Juvenile Diabetes Research Foundation & Diabetes Australia

➤ **World leader** in putting GI research into practice



➤ **Mission** to assist food suppliers in providing, and consumers in selecting, nutritionally healthy foods using the Glycemic Index

➤ **Committed** to an improvement in public health by raising the **awareness** and **understanding** of the health benefits of low GI diets – from a holistic and chronic disease perspective

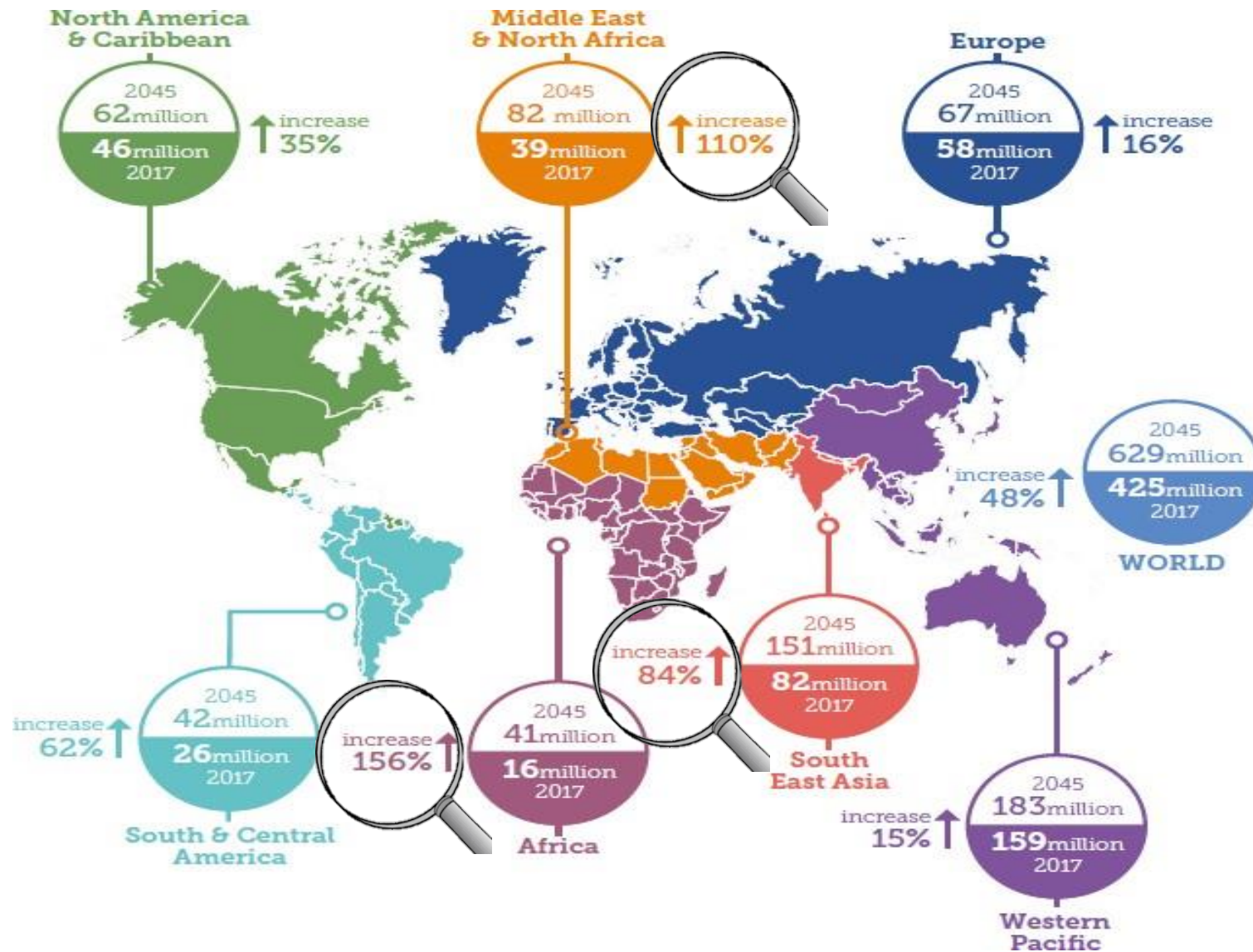
➤ All funds raised **invested** in health education & promotion ; new research and global collaboration & partnerships



THE UNIVERSITY OF  
**SYDNEY**

# Diabetes – a global emergency

Number of people with diabetes worldwide and per region in 2017 and 2045 (20-79 years)



# Glycemic Index incorporated into global diabetes guidelines



Diabetes organisations around the globe have incorporated GI into their healthy eating guidelines for the prevention and management of diabetes

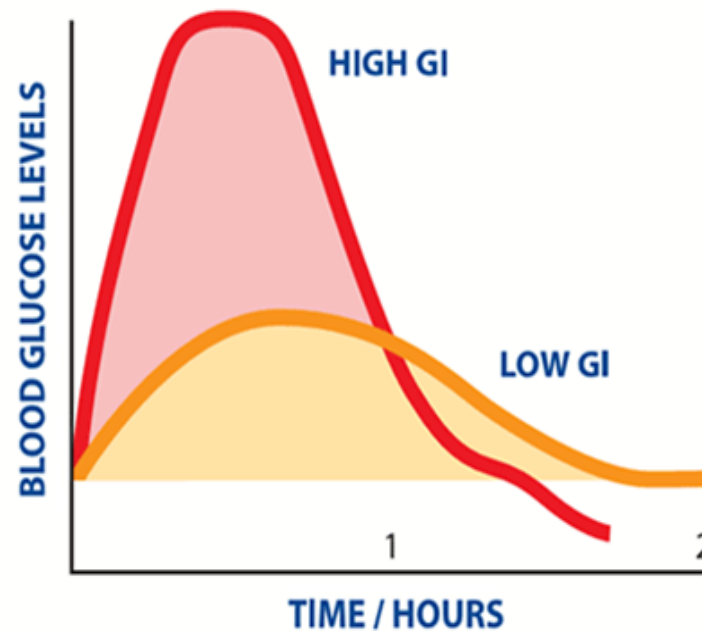
**425 million**  
adults with diabetes in 2017

An estimated  
**629 million**  
by 2045





# The global ISO for independent GI testing



# GI Methodology

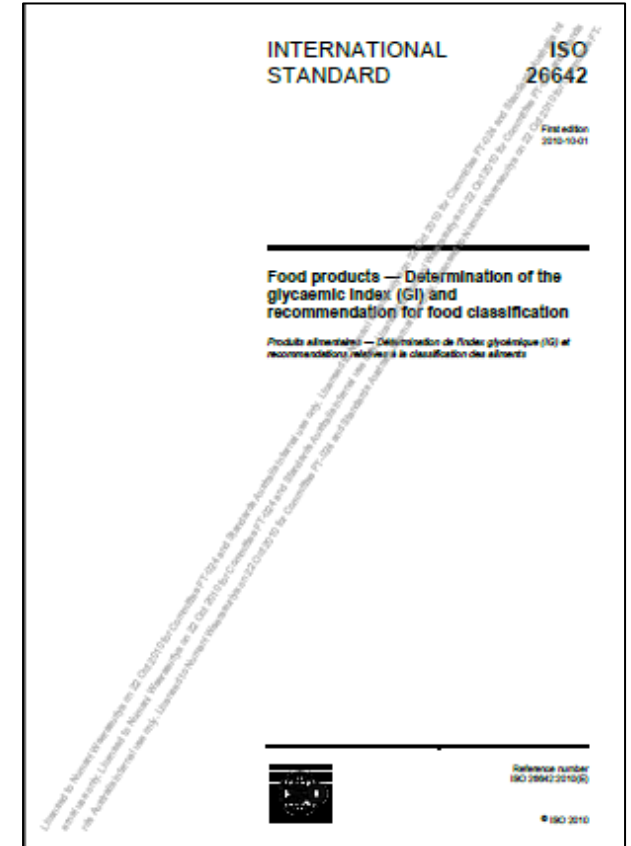
- The GI of a food is determined by a standardized *in vivo* testing protocol
- Australian Standard: Glycemic Index of foods (AS 4694) published in 2007
  - Details the method for determining the GI of a food – testing requirements
- The Australian Standard lead to the development of an International Standard: ISO/FDIS 26642 in 2010
  - Developed by a range of experts within the field
  - Improves reproducibility and reliability of published data



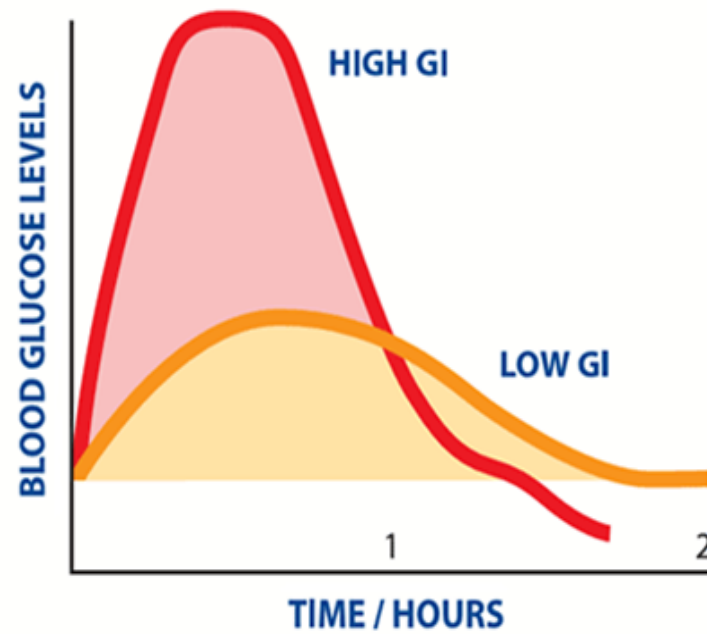
# ISO 26642: Determination of GI

The standard covers the following protocol areas:

- Ethical approval
- Subject characteristics (inclusion & exclusion criteria)
- Reference food and test foods
  - Available carbohydrate content
  - Portion size
- Administration of a test session
- Blood collection methods
- Analysis of results
- Test report
- ISO's in Malaysia are managed by the Department of Standards, part of the Ministry of International Trade and industry.



# GI, GL and diabetes prevention

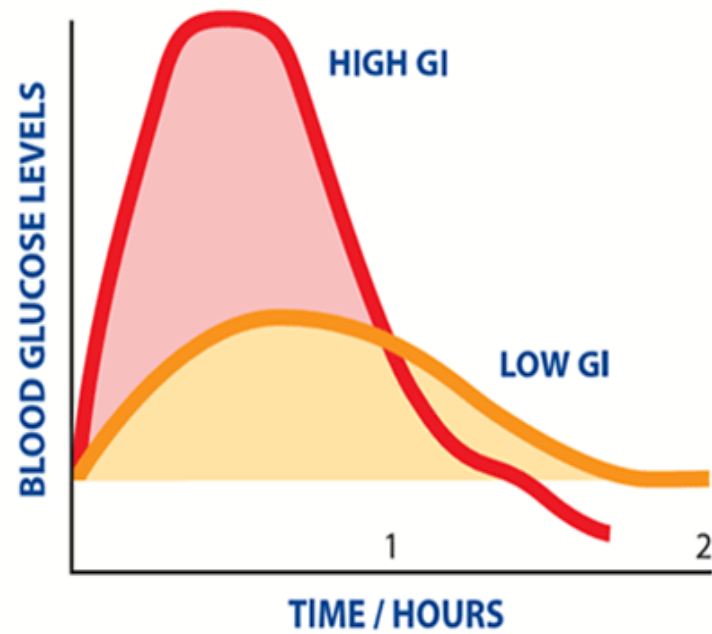




# Systematic review and meta-analysis of low GI and GL diets and risk of type 2 diabetes

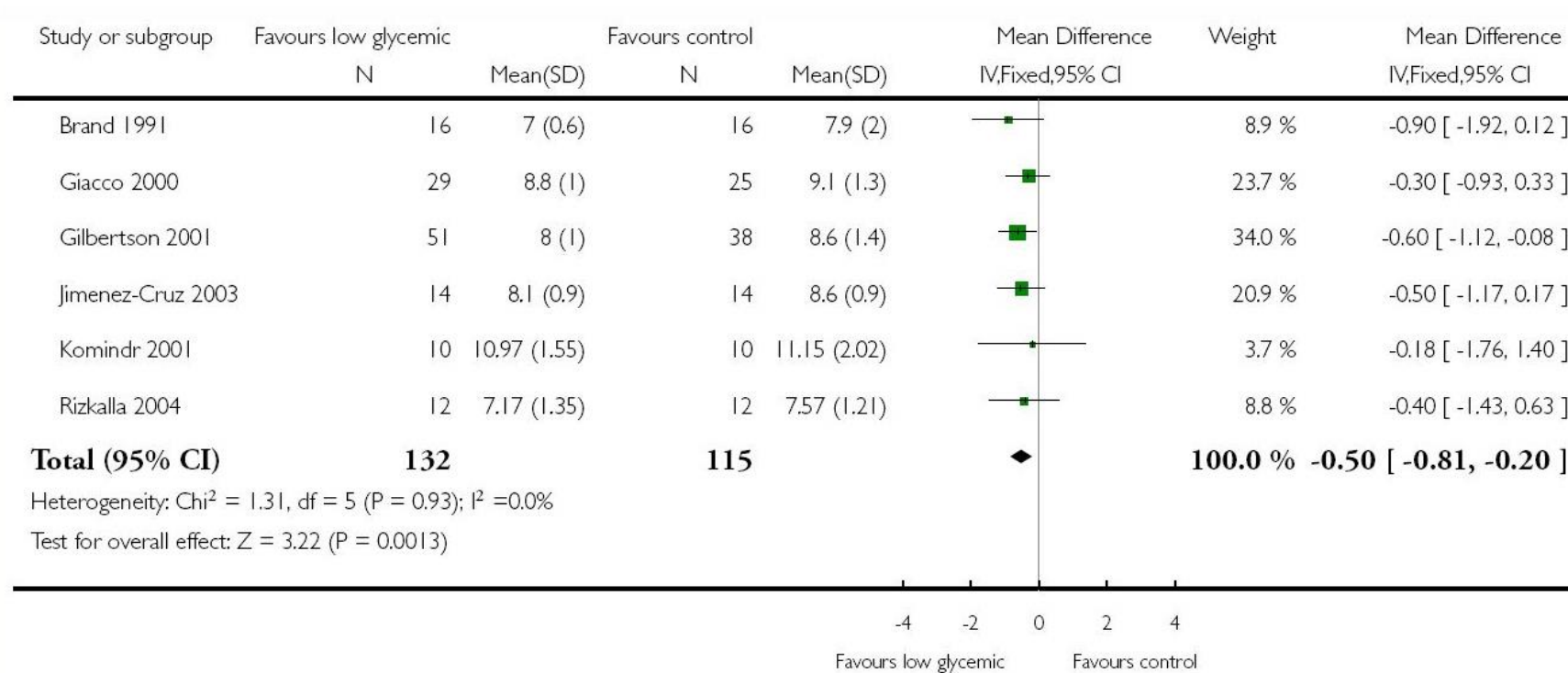
- All evidence available from prospective cohort studies published before December 2018.
- 6.9 million person years of follow-up.
- Consuming a diet with an average GI of 76 vs 48:
  - 87% higher risk of developing diabetes
- Consuming a diet with a GL of 257g vs 73g per 8,400 kJ:
  - 89% higher risk of developing diabetes

# GI and diabetes management

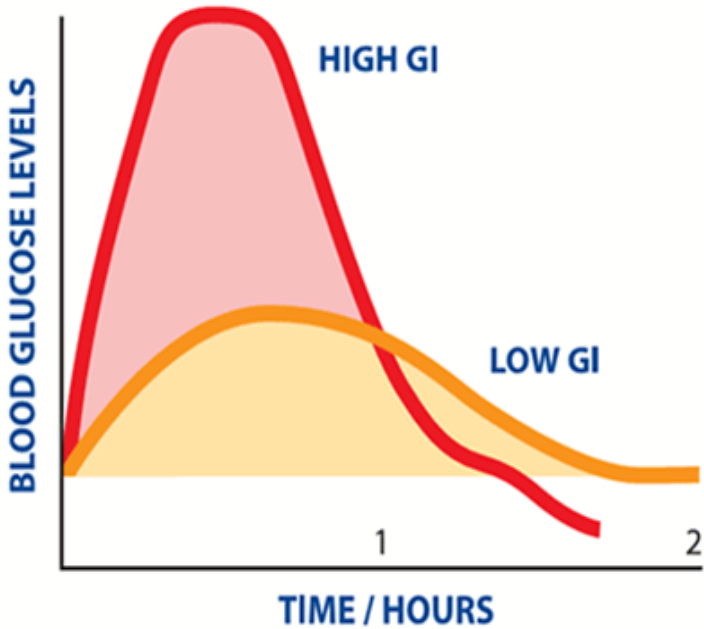


# GI and glycated haemoglobin

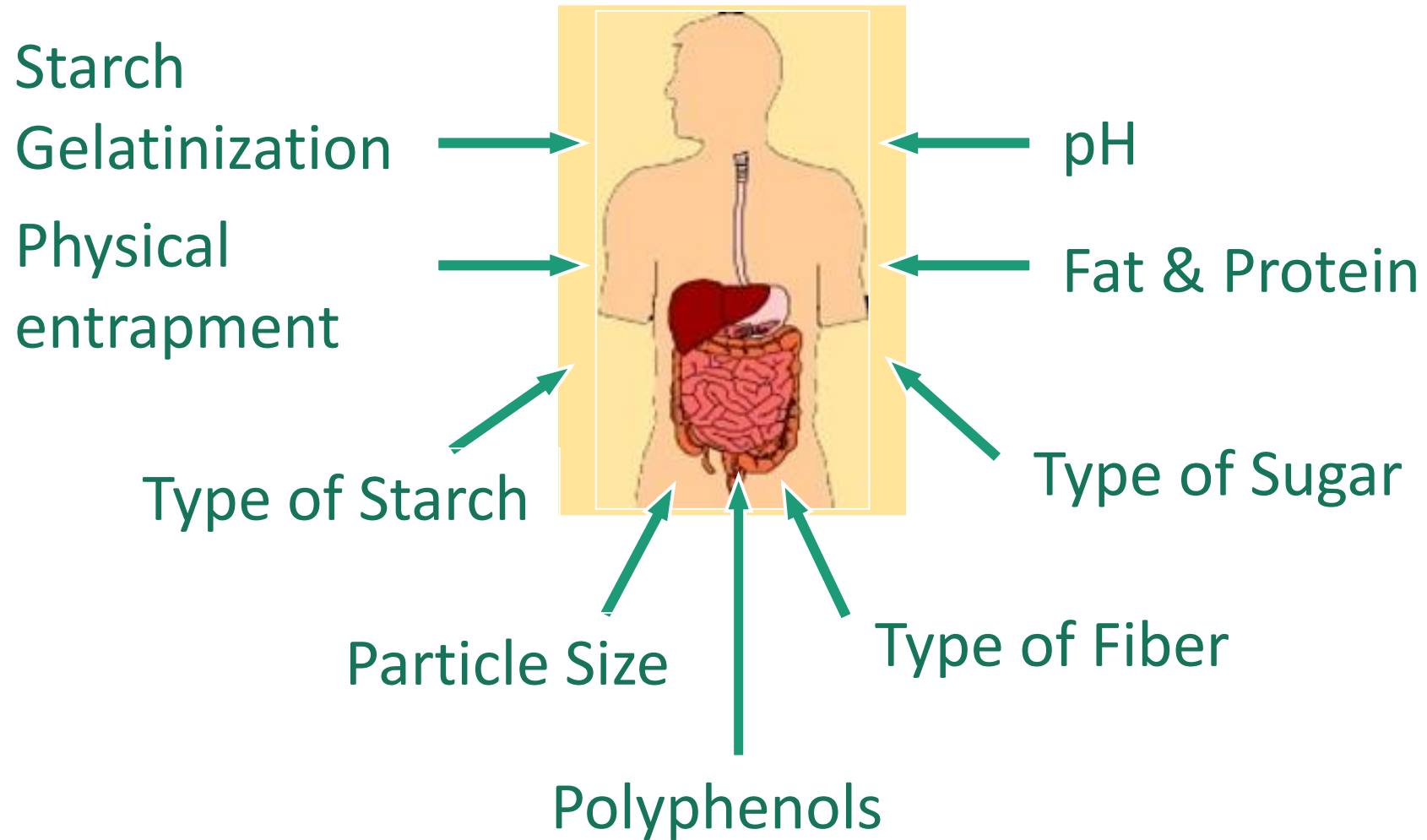
- Cochrane (systematic) review of 11 RCT's.
- 402 people with diabetes.



# GI, ingredients, foods and meals



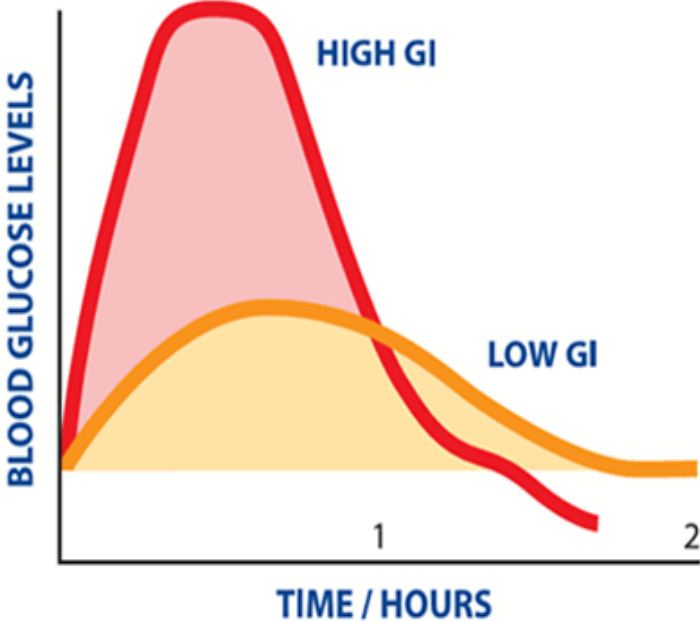
# Factors Influencing an ingredients/foods GI



# The GI of meals and diets

- The GI of carbohydrate-containing meals can be measured directly using ISO 26642.
- The GI of mixed meals can be calculated with an acceptable degree of accuracy using an internationally recognised method<sup>1</sup>, provided the GI and total available carbohydrate content of the ingoing ingredients are well described<sup>2</sup>.
- International tables of GI are readily available for research purposes<sup>3</sup>, plus the University of Sydney maintains a free on-line database ([www.glycemicindex.com](http://www.glycemicindex.com)) for research purposes

# Lowering the GI and GL of an Asian-style diet



# Sample Cantonese menu plan – original

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
<b>Breakfast</b> 7-8 am	Steamed rice noodle rolls  Tea	Fish congee  Tea	Steamed buns  Tea	Fried rice noodle rolls  Tea	Minced beef congee  Tea	Steamed buns  Tea	Plain congee  Radish cake  Tea
<b>Lunch</b> 12-1 pm	Yangzhou fried rice with prawns	Fresh noodles with beef and garlic chives	Roasted duck noodle soup	White cut chicken with rice	Pineapple and chicken fried rice	BBQ pork with rice	Steamed rice with chicken and mushroom
<b>Dinner</b> 7-8 pm	Jasmine Rice  Tomato and egg soup  Stir-fried beef with spring onions  Chinese broccoli in oyster sauce  Orange	Jasmine Rice  Sliced fish and coriander soup  Stewed chicken wings and water chestnut  Ma Po tofu  Apple	Jasmine Rice  Tomato, potato and pork bone broth  Steamed chicken and mushrooms  Stir-fried bok choy  Pear	Jasmine Rice  Mixed vegetable soup  Steamed fish  Stir-fried eggs and tomato  Grapes	Jasmine Rice  Cantonese corn soup  Sweet and sour pork  Boiled lettuce  Orange	Jasmine Rice  Seaweed and egg soup  Steamed egg custard with prawns  Spicy eggplant  Apple	Jasmine Rice  Carrot and pork bone broth  Braised tofu  Steamed spare ribs with black bean sauce  Orange



# Sample Cantonese menu plan – carb swaps

<b>Food</b>	<b>GI</b>	<b>Lower GI alternative</b>	<b>GI value of alternative</b>
Jasmine rice	89	Uncle Ben's Jasmine rice	49
Cornflour	70	Low GI bread flour	57
Sugar	68	LoGiCane sugar	50
Wheat flour	70	Stoneground flour	57
Chicken stock	70		
Honey	64	Wildflower honey	35-53
Potato	76	Carisma potato	55
Pineapple	59		
Soy sauce	67		
Oyster sauce	67		
Hoisin sauce	67		

# Sample Cantonese menu plan – modified

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
<b>Breakfast</b> 7-8 am	Steamed rice noodle rolls  Tea  Calcium enriched soymilk	Fish congee  Tea  Calcium enriched soymilk	Steamed buns  Tea  Calcium enriched soymilk	Fried rice noodle rolls  Tea  Calcium enriched soymilk	Minced beef congee  Tea  Calcium enriched soymilk	Steamed buns  Tea  Calcium enriched soymilk	Plain congee  Radish cake  Tea  Calcium enriched soymilk
<b>Lunch</b> 12-1 pm	Yangzhou fried rice with prawns  Boiled lettuce  Calcium enriched soymilk  Pear	Fresh noodles with beef and garlic chives  Stir-fried baby bok choy  Calcium enriched soymilk  Apple	Roasted duck noodle soup  Stir-fried Chinese Broccoli  Calcium enriched soymilk  Apple	White cut chicken with rice  Boiled baby bok choy  Calcium enriched soymilk  Orange	Fresh noodle with beef and garlic chives  Stir-fried Chinese Broccoli  Calcium enriched soymilk  Pear	BBQ pork with rice  Boiled lettuce  Calcium enriched soymilk  Pear	Steamed rice with chicken and mushroom  Stir-fried baby bok choy  Calcium enriched soymilk  Banana
<b>Dinner</b> 7-8 pm	Uncle Ben's Jasmine Rice  Tomato and egg soup  Stir-fried beef with spring onions  Chinese broccoli in oyster sauce  Orange	Uncle Ben's Jasmine Rice  Sliced fish and coriander soup  Stewed chicken wings and water chestnut  Ma Po tofu  Apple	Uncle Ben's Jasmine Rice  Tomato, potato and pork bone broth  Steamed chicken and mushrooms  Stir-fried bok choy  Pear	Uncle Ben's Jasmine Rice  Mixed vegetable soup  Steamed fish  Stir-fried eggs and tomato  Grapes	Uncle Ben's Jasmine Rice  Cantonese corn soup  Sweet and sour pork  Boiled lettuce  Orange	Uncle Ben's Jasmine Rice  Seaweed and egg soup  Steamed egg custard with prawns  Spicy eggplant  Apple	Uncle Ben's Jasmine Rice  Carrot and pork bone broth  Braised tofu  Steamed spare ribs with black bean sauce  Orange

# Nutrient analysis of Cantonese menu plan

<b>CANTONESE</b>	<b>Original menu</b>	<b>Modified menu</b>	<b>Australian RDIs</b>
<b>Energy (kJ)</b>	7280	7590	6900-9100
<b>Protein</b>	24%	25%	10-25%
<b>Total Fat</b>	20%	22%	25-35%
<i>Saturated fat</i>	5.0%	4.8%	<10%
<b>Carbohydrate</b>	53% (230 g)	48% (214 g)	45-60%
<b>Sodium (mg)</b>	6004	2284	920- 2300
<b>Iron (g)</b>	10	15	8
<b>Calcium (mg)</b>	334	1044	1000
<b>Fibre (g)</b>	17	30	30
<b>GI</b>	75	48	45
<b>GL</b>	170	102	80-145

# Australian Experience

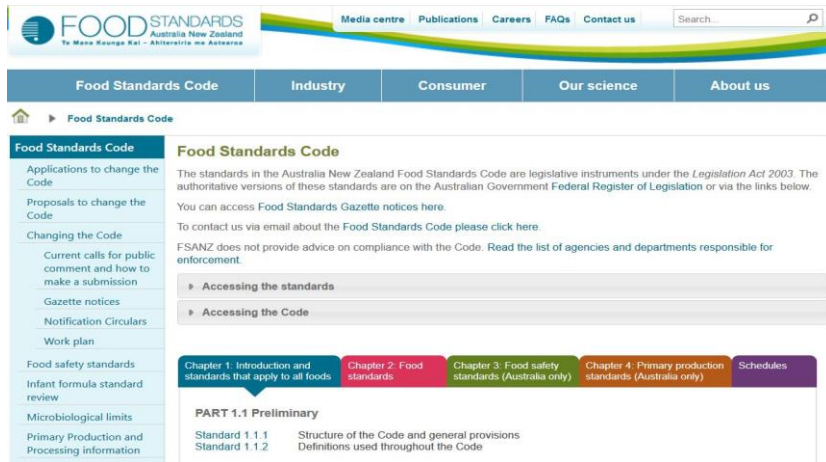


# Australia and New Zealand Food Standards Code

- Gazetted as part of Standard 1.2.7 in Jan 2013:

*“glycemic index (GI) means the property of the carbohydrates in different foods, specifically the blood glucose raising ability of the digestible carbohydrates in a given food.”*

- Defined as a nutrition content claim, with special conditions:



## SCHEDULE 1

### Conditions for nutrition content claims

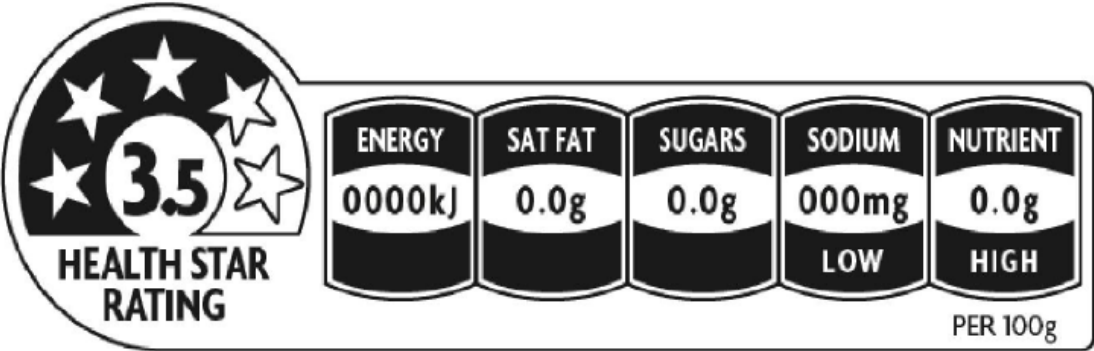
Column 1	Column 2	Column 3	Column 4
Property of food	General claim conditions that must be met	Specific descriptor	Conditions that must be met if using specific descriptor in column 3
Glycaemic Index	(a) the food meets the NPSC, unless the food is a food standardised by Part 2.9 of the Code; and (b) the claim or the nutrition information panel under Standard 1.2.8 includes the numerical value of the glycaemic index of the food.	Low	The numerical value of the glycaemic index of the food is 55 or below.
		Medium	The numerical value of the glycaemic index of the food is at least 56 and not exceeding 69.
		High	The numerical value of the glycaemic index of the food is 70 or above.
Glycaemic load	The food meets the NPSC, unless the food is a food standardised under Part 2.9 of the Code.		

# The GI Symbol Program - trademark



- Products must be tested by approved laboratory using the International Standard (ISO 26642:2010) procedure.
- Products must contain  $\geq$  7.5g of Carbohydrate, or  $\geq$  80% carbohydrate AND be traditionally served in multiple units of small serve sizes
- Products must meet strict nutrition criteria:
  - Energy
  - Total carbohydrate
  - Total Fat & Sat Fat
  - Sodium
  - Dietary Fibre &
  - Calcium

# GI Symbol supports Government Front of Pack Labelling



# Australian consumers response







- Awareness of **Glycemic Index (GI)** in 2001 was **28%**
- Since 2005 awareness of the **Glycemic Index (GI)** has been above 75% with interest in GI still high:
  - Over **84% of Australians have an interest** in finding out more about how GI of foods can improve their overall health.
  - Higher amongst people with Type 2 Diabetes
- **60% of Australians are aware of the GI Symbol**
- **Highest awareness of GI Symbol amongst:**
  - ✓ People with Type 2 diabetes
  - ✓ Females
  - ✓ 25-34 year age group, young families

# Global Trend – consumers are looking for authority they trust

**GLYCEMIC INDEX FOUNDATION CERTIFIED**

**GLYCEMIC INDEX THE GI SYMBOL**

Look for the GI Symbol, your **TRUSTED** guide, to make healthy low GI choices quick and easy

Foods carrying this  guarantee that they have been

- **reliably tested** ✓
- **meet very strict nutrient criteria** ✓

**NUTRITIONAL INFORMATION**  
AVERAGE SERVING SIZE - 45g

**GI CERTIFIED ENSURES SPECIFIC LIMITS FOR:**

- CARBS
- ENERGY
- TOTAL SATURATED FAT

**ADEQUATE LEVELS OF (WHERE APPROPRIATE):**

- FIBRE
- CALCIUM

**TRUST**

[WWW.GISYMBOL.COM](http://WWW.GISYMBOL.COM)

# Education & Promotion = putting into practice

**GLYCEMIC INDEX**  
**WHAT IS GI?**

The GI measures how **carbs** affect your **blood glucose levels**, helping you choose foods for **good health**

High GI carbs cause blood glucose levels to *spike and then crash*  
Low GI carbs are digested and released slowly for **sustained energy**

**Blood Glucose Levels**

**Time/Hours**

1 HOUR 2 HOURS

↑ HIGH GI ↓ LOW GI

You need **carbs** as they break down into glucose in your body providing **fuel** for most organs • our brain • muscles during exercise

[WWW.GISYMBOL.COM](http://WWW.GISYMBOL.COM)



# Simple but Trusted Information



**GLYCEMIC  
INDEX  
FOUNDATION**  
*Making healthy choices easy*

[About GI](#) [GI Symbol](#) [GiLICIOUS](#) [Diabetes](#) [Recipes](#) [Newsletter](#)

[Swap It](#)



The Glycemic Index Foundation's

## Swap It Tool



Using the GI is easy. You don't need to know numbers or do the maths.  
Simply swap your usual carbohydrate food for a lower GI one.  
Use this tool to swap the foods you enjoy eating with low GI alternatives.



Breads



Breakfast Cereal



Oats



**Glycemic Index Foundation**  
Published by GAIN [?] · 30 May ·

Do you cook with legumes? 🍲 Dried and canned beans, lentils & chickpeas are all low GI, nutrient- rich along and are packed with protein and fibre 🍌

Get your legume fix with this chorizo, rice and bean bowl:  
<https://bit.ly/2E6ugnJ>



9,369 People reached 4,221 Engagements

👍👎👁️ 3.9K

**44%**  
HIGHEST ENGAGEMENT

The Glycemic Index Foundation's

## Swap It Tool

Using the GI is easy. You don't need to know numbers or do the maths. Simply swap your usual carbohydrate food for a lower GI one. Use this tool to swap the foods you enjoy eating with low GI alternatives.

## Active Social Media



In this issue of Low GI Living we look at how diet can affect energy levels, how to snack smart if the afternoon slump hits and share inspiration to spice up your brekkie with a twist on overnight oats using low GI rice. Happy reading!



### News: Low GI for Sustained Energy

Guilty of giving in to those naughty mid-afternoon chocolate cravings? What is the cause of the dreaded arvo slump and can we avoid it?

[Read More](#)

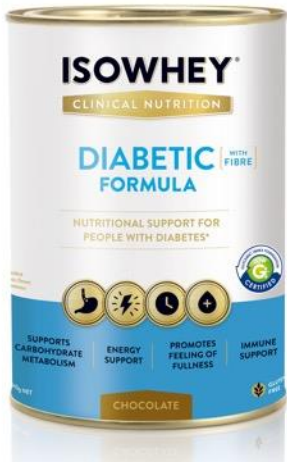


### Spotlight: Smart Snacking

If an afternoon craving hits, what are the best snacks to help keep you satisfied until dinnertime?

[Read More](#)

# Markets Like Australia have a range of proven sectors



WHEY



RICE



HONEY



SUGAR



BREADS



CHAPATI



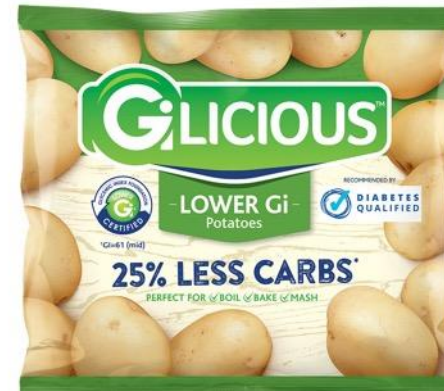
CEREALS



MALTED DRINKS



RTD DRINKS



POTATOES



OAT BARS

# On-pack education is important



- On-pack education is critical to enhance understanding and reduce risk of any misunderstanding.
- FIA Research\* shows that:
  - 69% of Malaysia feel that clear displays of nutritional information on pack is important.
  - 62% want packaging to list ingredients that improve the health standards.
  - Only 3% of Malaysians feel that food companies are doing enough to offer healthier choices.
  - 71% feel that if there are healthier choices they are too expensive.
  - 75% feel that food companies should change their recipes to make products healthier.

# Tackling obesity in ASEAN

## Prevalence, impact, and guidance on interventions

An Economist Intelligence Unit report commissioned by the Asia Roundtable on Food Innovation for Improved Nutrition



***‘Interventions that target food intake show considerable promise in terms of impact on obesity at both the individual and population level, according to global studies.’***

### Interventions

Figure 3: Interventions showing the greatest promise<sup>a</sup>

Category	Subcategory	Example interventions/focus of interventions	Promise of intervention	Direction of evidence base	Quality of body of evidence	Magnitude of population impact	Stakeholder driving change			
							Healthcare	Education	Food	Policy
Physiology	Individual	Anti-obesity drugs	★★	↗	Strong	Medium	●			●
Activity	Individual	Physical activity	★★★	↗	Moderate to strong	High	●	●		●
Food	Individual	Calorie-controlled diet	★★	↑	Moderate	Medium	●	●	●	
		Low-fat diet	★★	↑	Moderate	Medium	●			
		Low-carbohydrate diet	★★	↑	Moderate	Medium	●			
		Low-glycaemic index diet	★★★	↑	Moderate to strong	Medium	●			
	Population	School and workplace policies	★★	↗	Moderate	High	●	●	●	●
		Controlling portion size in processed and prepackaged foods	★★	↗	Moderate	High			●	●
		Taxation	★★	↗	Moderate	High				●

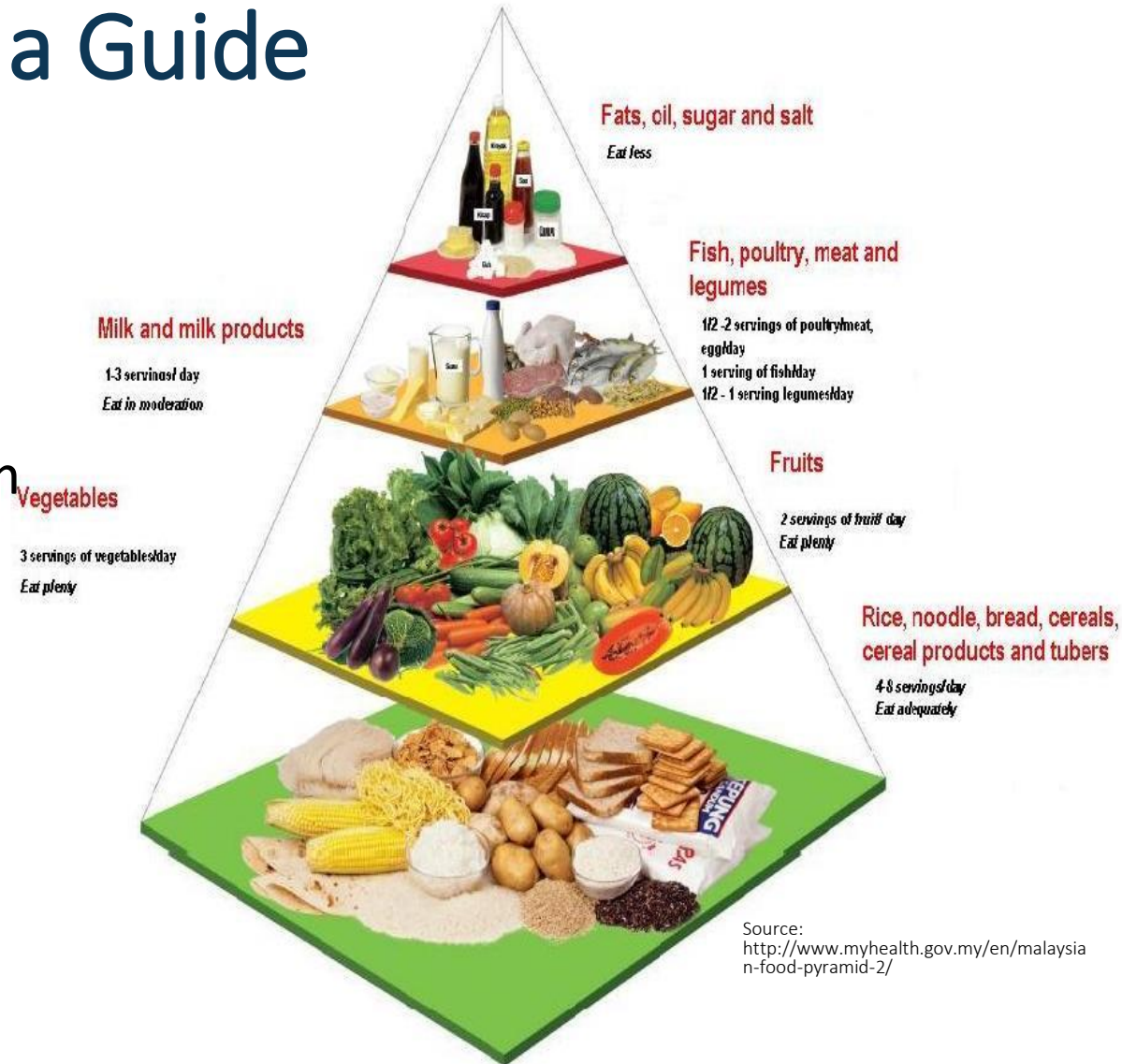
Commissioned by





# Malaysian Food Pyramid as a Guide

- Malaysian's are encouraged to balance their total daily diet in relation to the pyramid for general nutritional health.
- In addition to refined and added sugars, Malaysians consume carbohydrates in the form of:
  - Dairy products
  - Vegetables and fruits
  - Less process, less refined, rice, cereals and breads.
- There are many food choices such as fruits  
Many vegetables as well as some of the less processed starches and some fruits also are lower in GI\*



Source:  
<http://www.myhealth.gov.my/en/malaysia-n-food-pyramid-2/>

# Low GI Foods can support Government programs



- Low GI foods & diets can be part of the strategy to meal planning but it should not be the primary strategy.
- Portion control, calorie control, exercise, and balanced diets should be part of a primary strategy for maintaining overall nutritional health.

Selamat Datang Ke Portal Rasmi  
**PENDIDIKAN PESAKIT**  
MyHEALTH Kementerian Kesihatan Malaysia

Diabetes ▾ Hipertensi ▾ Asma ▾ Renal ▾ Kanser ▾ Tibi ▾ Video ▾

## DIABETES DAN INDEKS GLISEMIK

Bukan Ubat-ubatan / Non-pharmacological (+3), Diabetes, Intervensi Gaya Hidup, Rawatan

f t e m + 76

### DIABETES DAN INDEKS GLISEMIK – APA KAITANNYA ?

Apakah yang dimaksudkan dengan Indeks Glisemik?

Indeks glisemik (IG) **mengukur berapa cepat** makanan yang mengandungi karbohidrat (seperti nasi) **meningkatkan paras gula dalam darah** seseorang selepas makanan tersebut dimakan.

- Makanan yang meningkatkan paras gula dengan **perlahan** dipanggil makanan **rendah IG**.
- Makanan yang meningkatkan paras gula secara **sedehana** dipanggil makanan **sedehana IG**.
- Makanan yang meningkatkan paras gula dengan **cepat** dipanggil makanan **tinggi IG**.

<http://pendidikanpesakit.myhealth.gov.my/en/glycaemic-index-and-glycaemic-load/>

# Summary

- We need a global food and nutrition strategy to address the diabetes pandemic
- Decreasing the average dietary glycemic index and glycemic load can be part of that strategy
- It is possible to identify and promote healthy low GI foods to the general population
- The GI Foundation and its GI Symbol has worked in Australia by working with governments, health authorities, food industry and consumers to:

*‘make healthy choices easy choices’*

