



**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

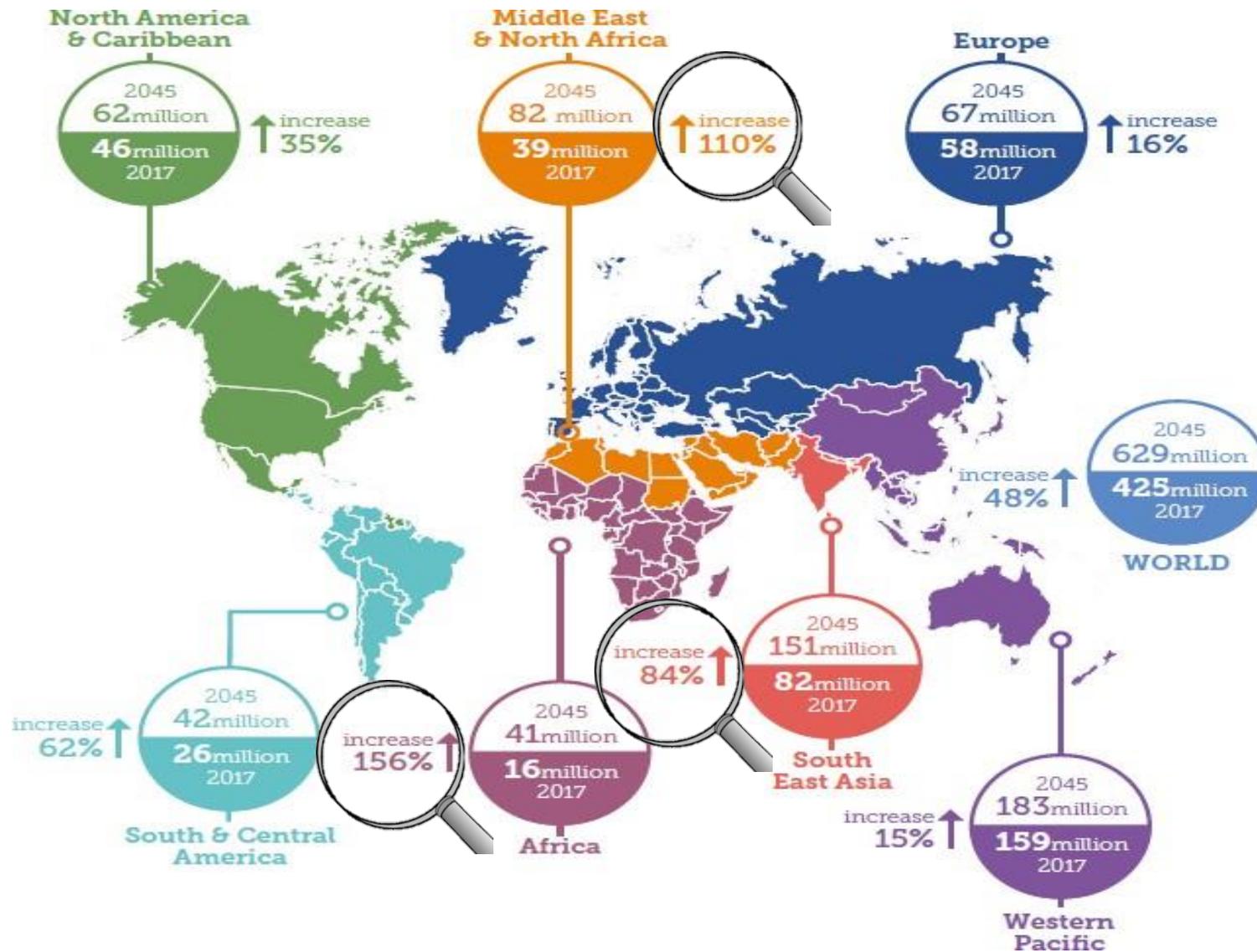
➤ All funds raised **invested** in health education & promotion ; new research and global collaboration & partnerships



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

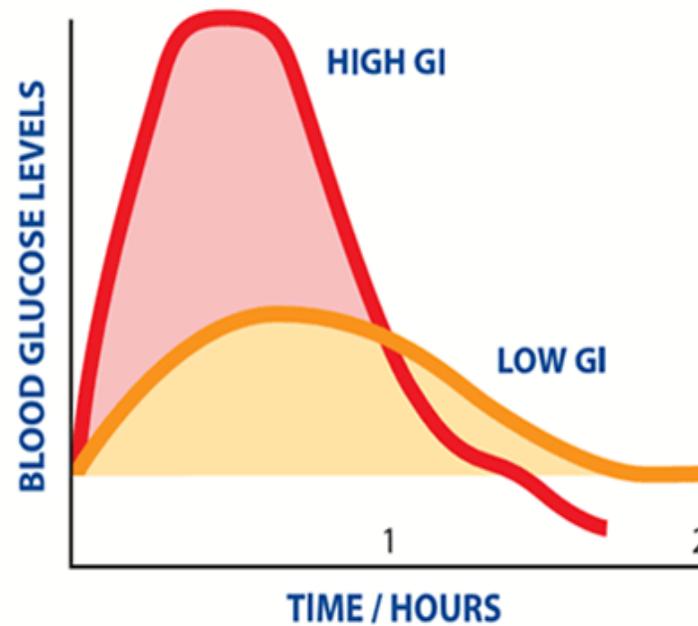
425 million
adults with diabetes in 2017

An estimated
629 million
by 2045





The global ISO for independent GI testing



GI Methodology

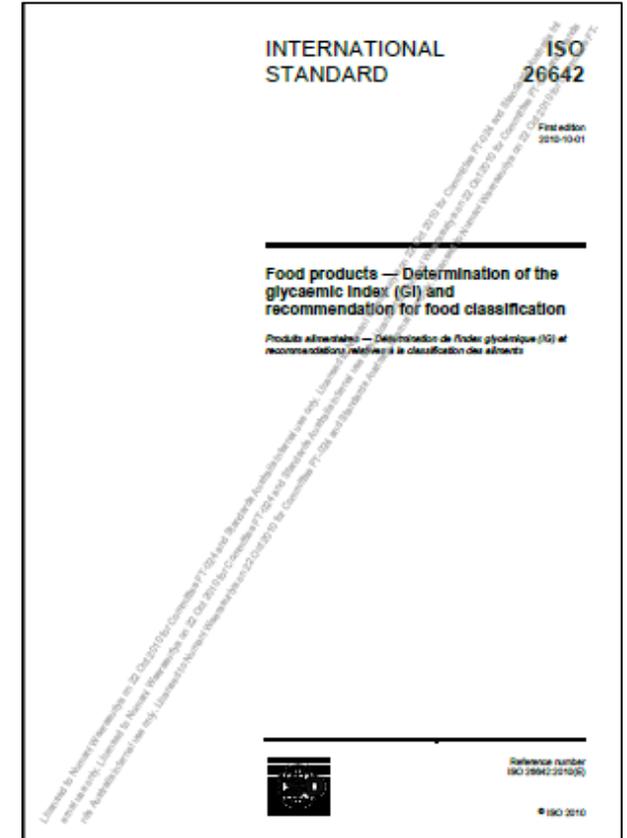
- The GI of a food is determined by a standardized *in vivo* testing protocol
- Australian Standard: Glycemic Index of foods (AS 4694) published in 2007
 - Details the method for determining the GI of a food – testing requirements
- The Australian Standard lead to the development of an International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



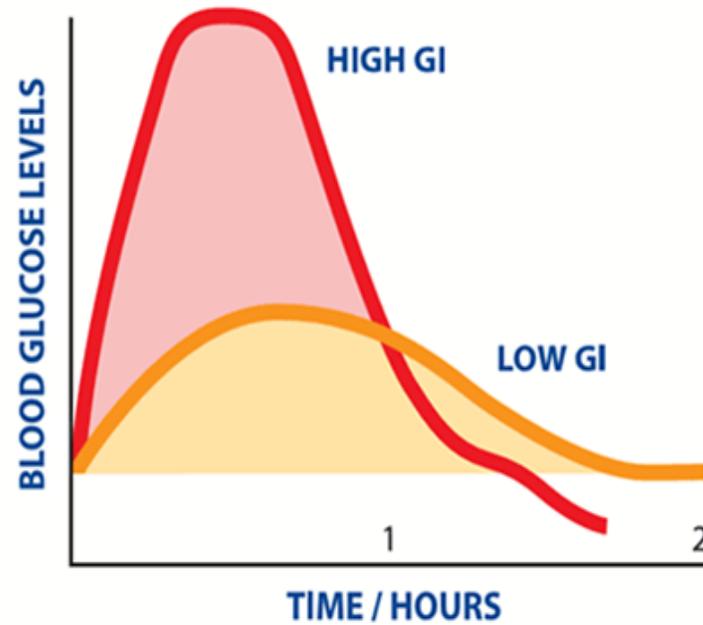
ISO 26642: Determination of GI

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.



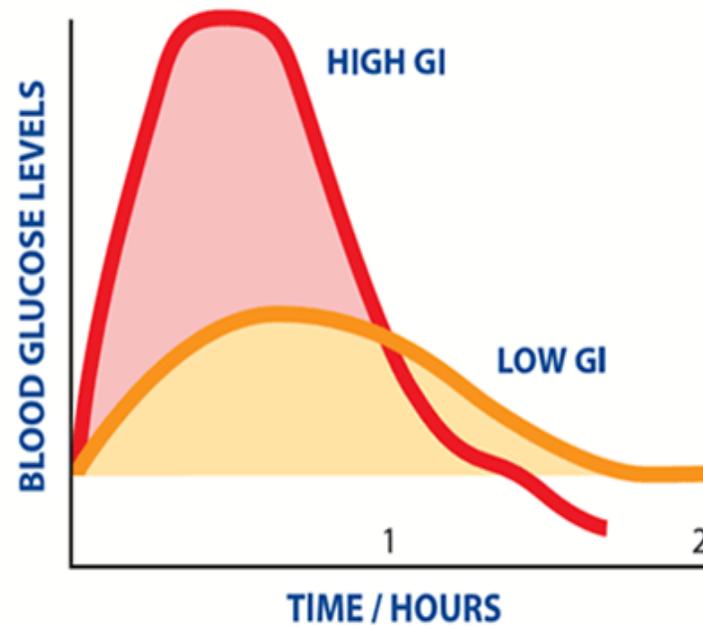
GI, GL and diabetes prevention



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

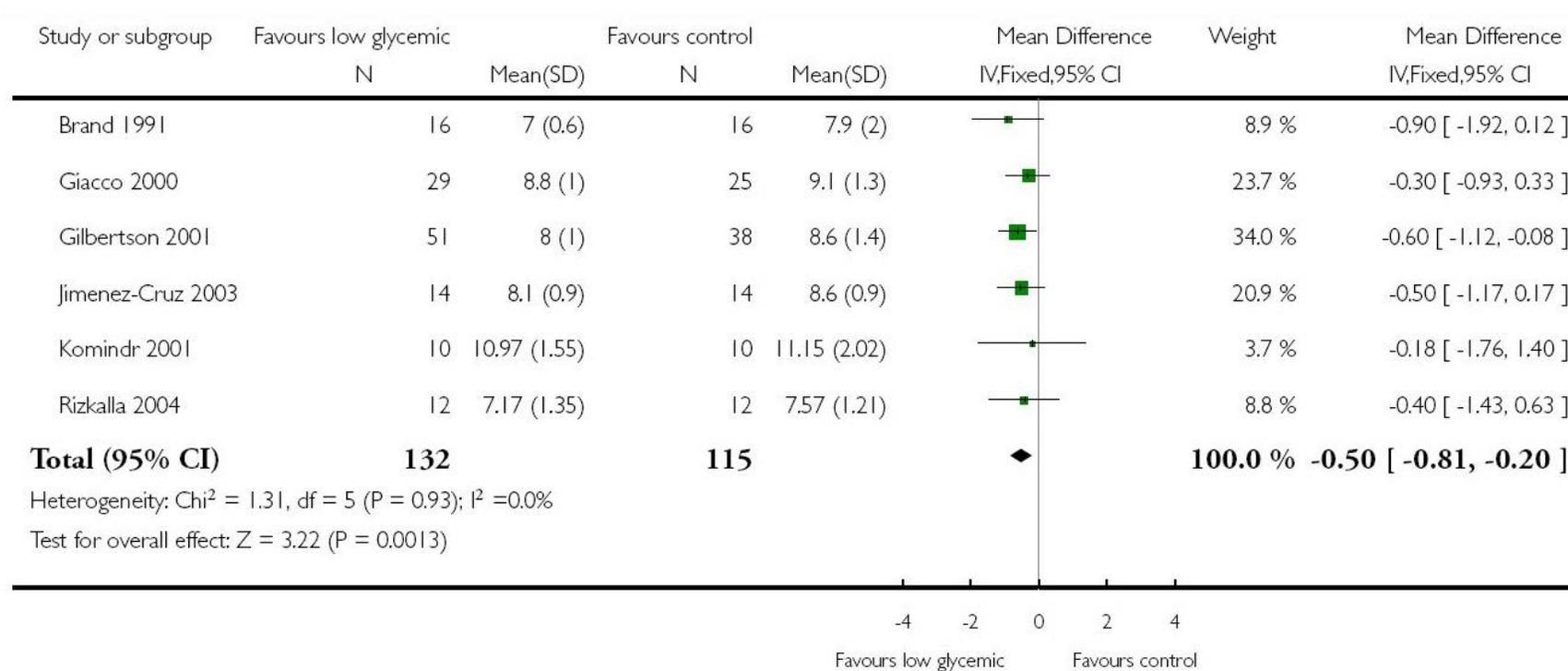
- All evidence available from prospective cohort studies published before December 2018.
- 6.9 million person years of follow-up.
- Consuming a diet with an average GI of 76 vs 48:
 - 87% higher risk of developing diabetes
- Consuming a diet with a GL of 257g vs 73g per 8,400 kJ:
 - 89% higher risk of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

GI and diabetes management

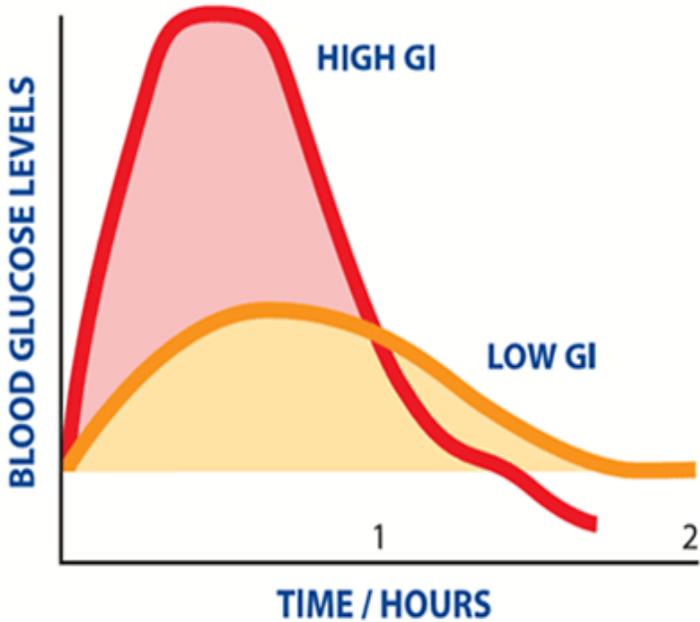


GI and glycated haemoglobin

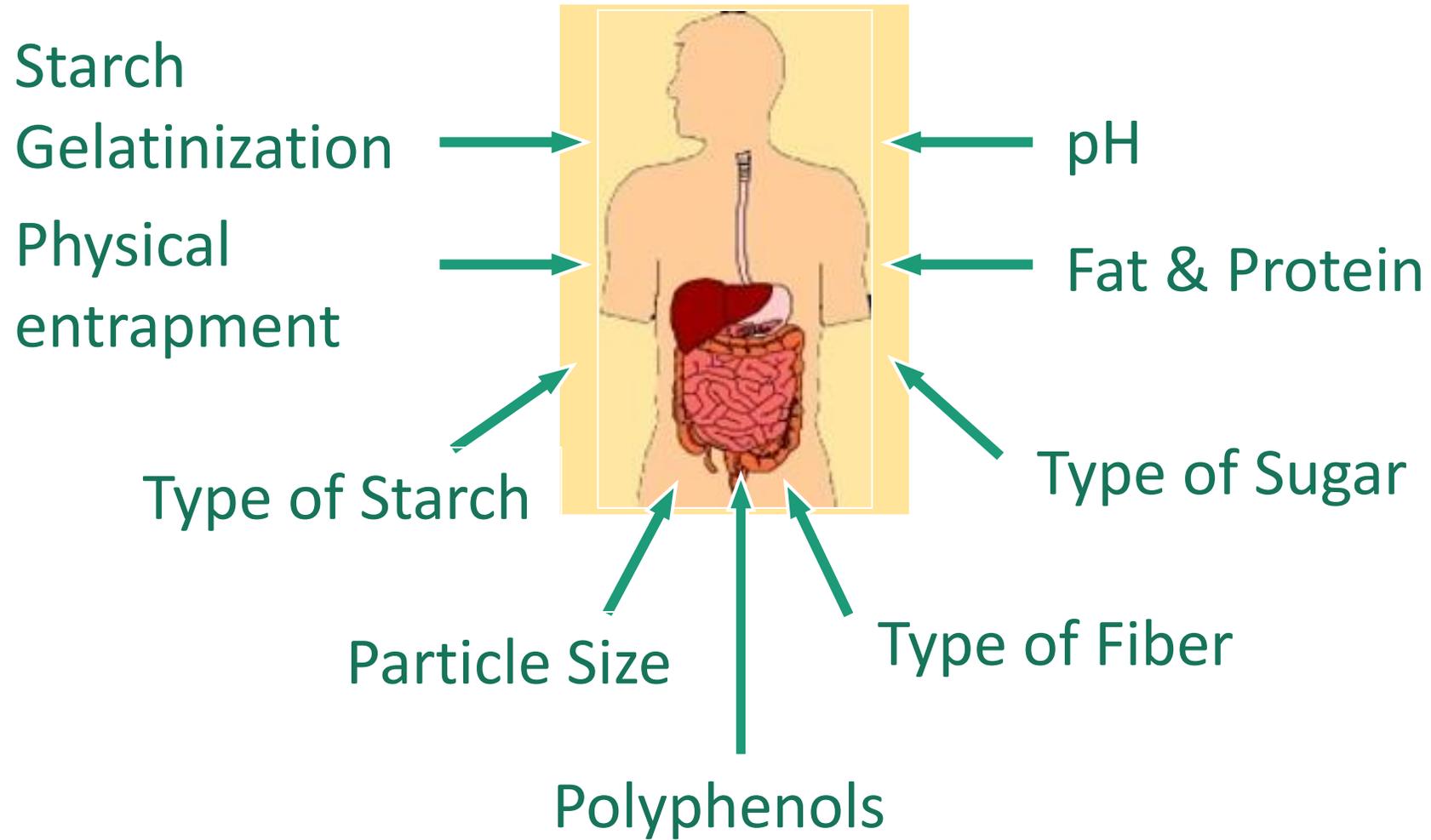
- Cochrane (systematic) review of 11 RCT's.
- 402 people with diabetes.



GI, ingredients, foods and meals



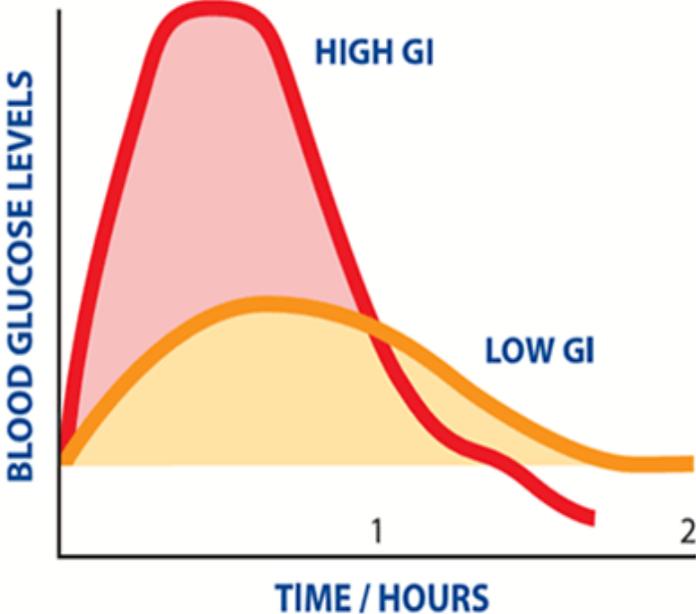
Factors Influencing an ingredients/foods GI



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 method¹, provided the GI and total available carbohydrate content of the ingoing ingredients are well described².
- International tables of GI are readily available for research purposes³, plus the University of Sydney maintains a free on-line database (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
Breakfast 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
Lunch 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
Dinner 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

Food	GI	Lower GI alternative	GI value of alternative
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
Breakfast 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
Lunch 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
Dinner 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

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

Australian Experience

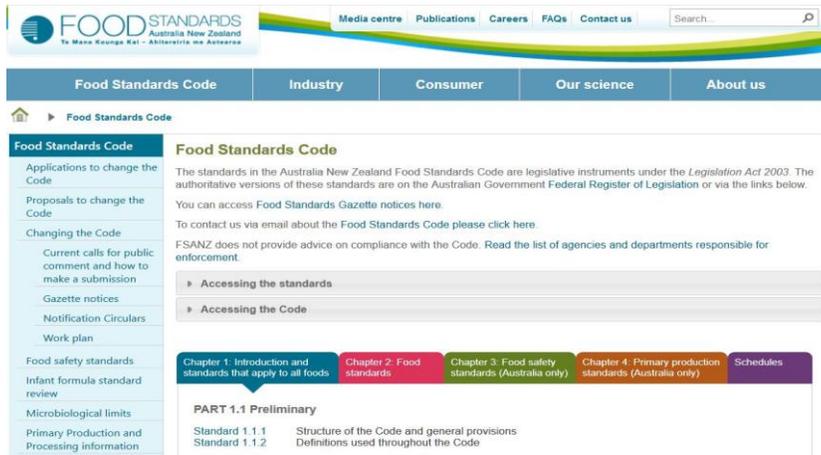


Australia and New Zealand Food Standards Code

- 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

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



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](#)

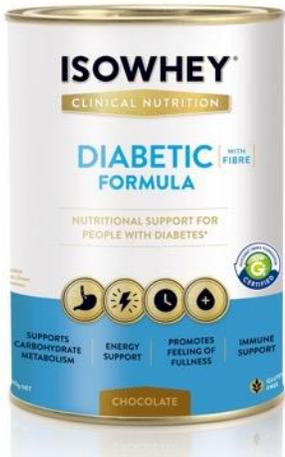


Spotlight: Smart Snacking

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



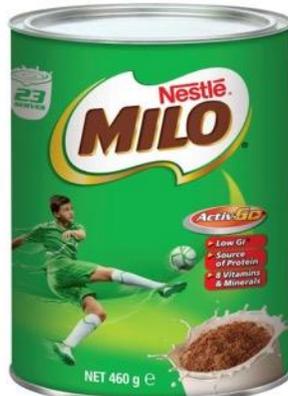
BREADS



CHAPATI



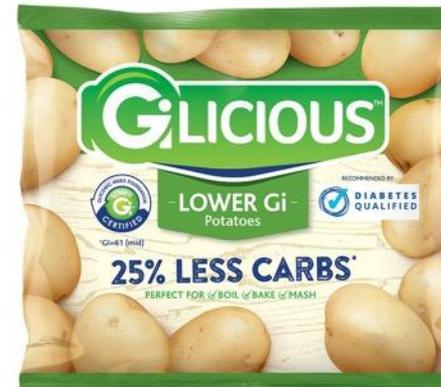
CEREALS



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^a

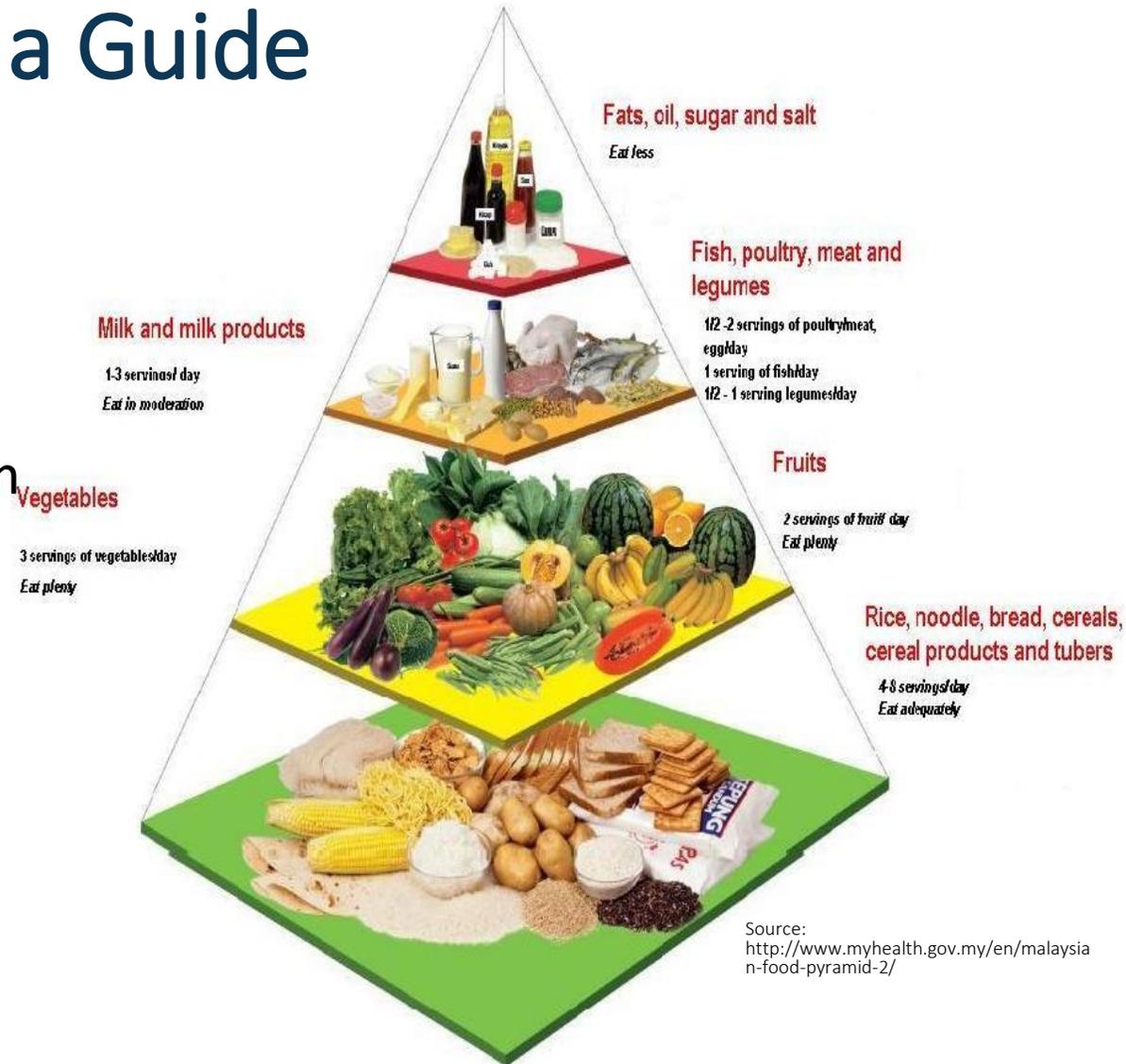
Category	Subcategory	Example interventions/focus of interventions	Promise of intervention	Direction of evidence base	Quality of body of evidence	Magnitude of population impact	Stakeholder driving change			
							Healthcare	Education	Food	Policy
Physiology	Individual	Anti-obesity drugs	★★	↗	Strong	Medium	●			●
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*



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.

A screenshot of the MyHEALTH website. The page header includes the Malaysian coat of arms, the MyHEALTH logo, and the text 'Pendidikan Pesakit' and 'Selamat Datang Ke Portal Rasmi Pendidikan Pesakit MyHEALTH Kementerian Kesihatan Malaysia'. A navigation menu lists 'Diabetes', 'Hipertensi', 'Asma', 'Renal', 'Kanser', 'Tibi', and 'Video'. The main content area is titled 'DIABETES DAN INDEKS GLISEMIK' and includes a sub-header 'Bukan Ubat-ubatan / Non-pharmacological (+3), Diabetes, Intervensi Gaya Hidup, Rawatan'. There are social media sharing icons for Facebook, Twitter, Print, Email, and a plus sign, with a count of 76. The main heading is 'DIABETES DAN INDEKS GLISEMIK – APA KAITANNYA ?'. The text explains that the Glycemic Index (IG) measures how quickly food containing carbohydrates (like rice) raises blood sugar levels. It lists three types of food: 'rendah IG' (low IG), 'sederhana IG' (moderate IG), and 'tinggi IG' (high 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’

