



# Food and Metabolic Health: back to basics

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**DAILY EXPRESS** **DAILY EXPRESS** **DAILY EXPRESS** **DAILY EXPRESS** **DAILY EXPRESS** **DAILY EXPRESS** **DAILY EXPRESS** **DAILY EXPRESS**

**STOMACH SURGERY TO BEAT DIABETES** **10p** **FREE £25** **CRISIS IN SYRIA** **DIABETES CURE WITHIN REACH** **SUNLIGHT IS KEY TO FIGHTING DIABETES** **£2 BET** **VACCINE WILL CURE DIABETES** **DIABETES: NEW BREAKTHROUGH**

**SIMPLE CHECK-UP TO BEAT DIABETES** **NEW DIET TO BEAT DIABETES** **YOGHURT IS KEY TO BEATING DIABETES** **DIABETES CURE WITHIN REACH** **SUNLIGHT IS KEY TO FIGHTING DIABETES** **£2 BET** **VACCINE WILL CURE DIABETES** **DIABETES: NEW BREAKTHROUGH**

**COFFEE HELPS BEAT DIABETES** **2 MINUTES EXERCISE WILL BEAT DIABETES** **REGULAR WALKING FIGHTS OFF DIABETES** **DIABETES 'CURE' TO END MISERY OF JABS** **JAB-FREE TEST FOR DIABETES** **VEG DIET WILL BEAT DIABETES** **SUNSHINE VITAMIN CAN STOP DIABETES** **EAT EGGS TO BEAT DIABETES**

**CHOCOLATE CAN BEAT DIABETES** **NEW DAILY JAB BEATS DIABETES** **EARLY TEST TO STOP DIABETES** **DAIRY DIET TON BEAT DIABETES** **NEW PILL CAN CURE DIABETES** **SLEEPING CUTS RISK OF DIABETES** **DIABETES: BIG BREAKTHROUGH**

**DIABETES: NEW BREAKTHROUGH** **TEST TO SPOT DIABETES RISK** **HOW YOU CAN BEAT DIABETES** **SCIENTISTS CAN HALT DIABETES** **NEW DIET CAN FIGHT DIABETES** **LOW CALORIE DIET CAN BEAT DIABETES** **GET FIT TO BEAT DIABETES** **NEW DIABETES BREAKTHROUGH**



# MACRONUTRIENTS

## PROTEIN

- Growth & repair
- Essential amino acids

## FAT

- Essential fatty acids
- Absorption of Fat Soluble Vitamins (A,D,E,K)
- Fat is richest source of dietary energy in diet



# CARBOHYDRATES

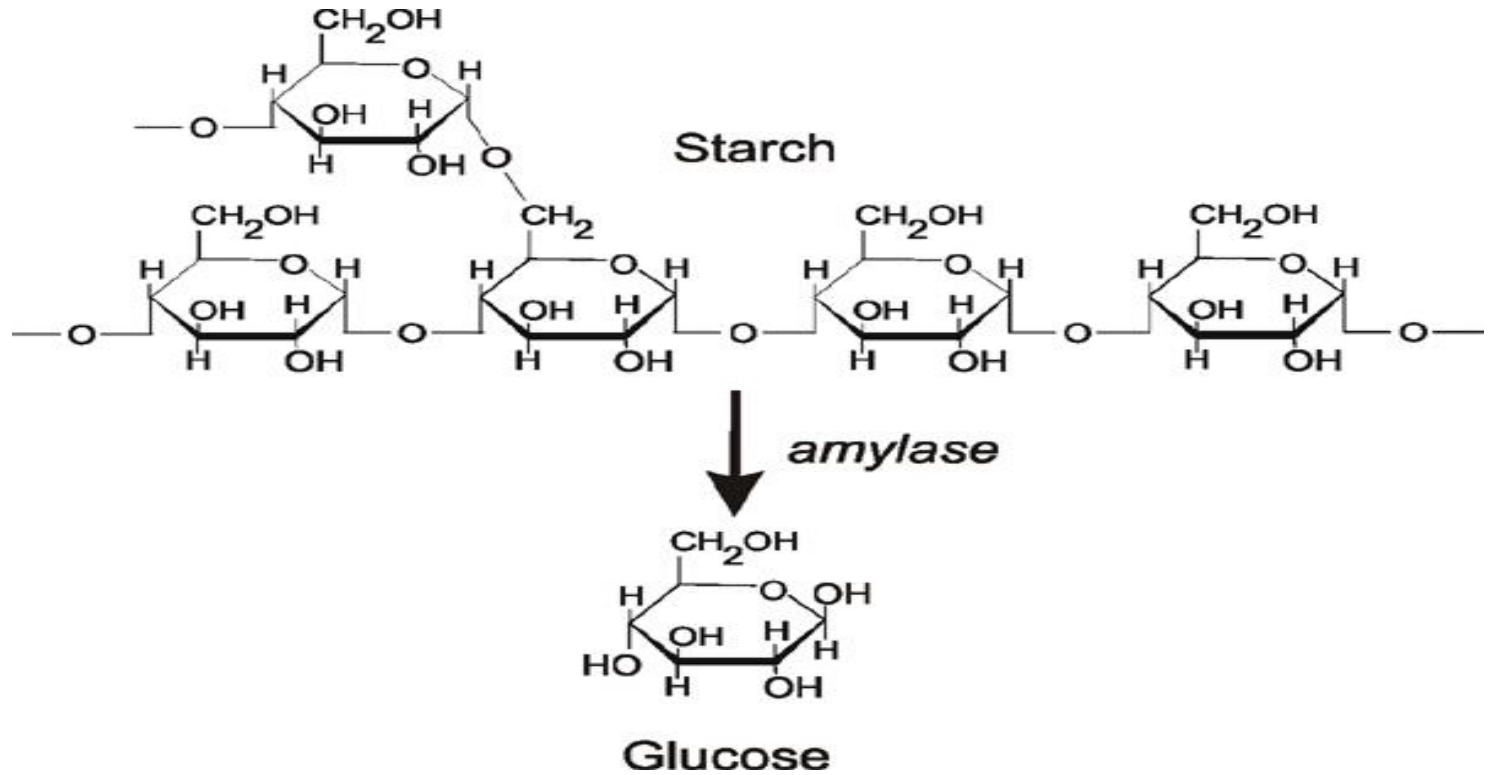
STARCH

FIBRE

SUGARS

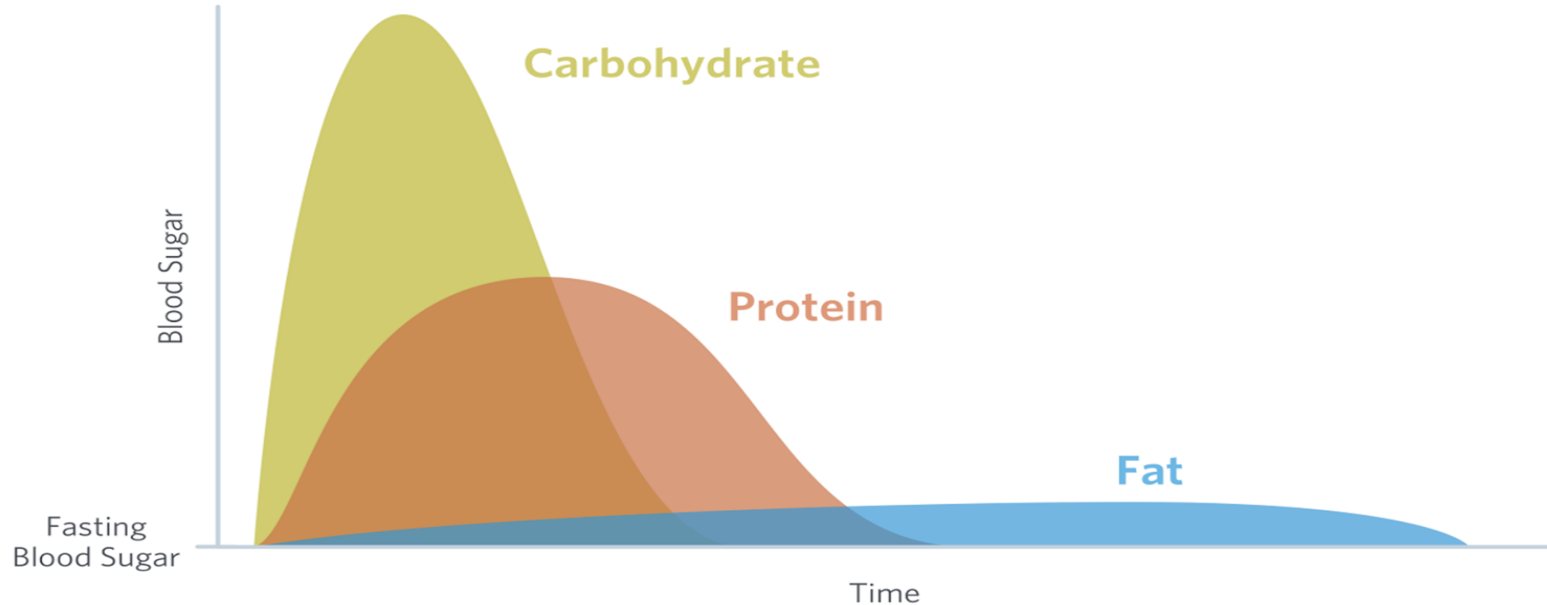
- Can often main energy source
- No direct physiological requirements for dietary carbohydrates, since the body can make all the glucose required (**Gluconeogenesis**)
- Quality and quantity are important
- Role of some fibre in Gut Microbiome (Tap et al. 2015)

# CARBOHYDRATES



# MACRONUTRIENTS & BLOOD GLUCOSE RESPONSE

## Are all calories equal?





# “FAKE” FOOD

## FREE SUGARS

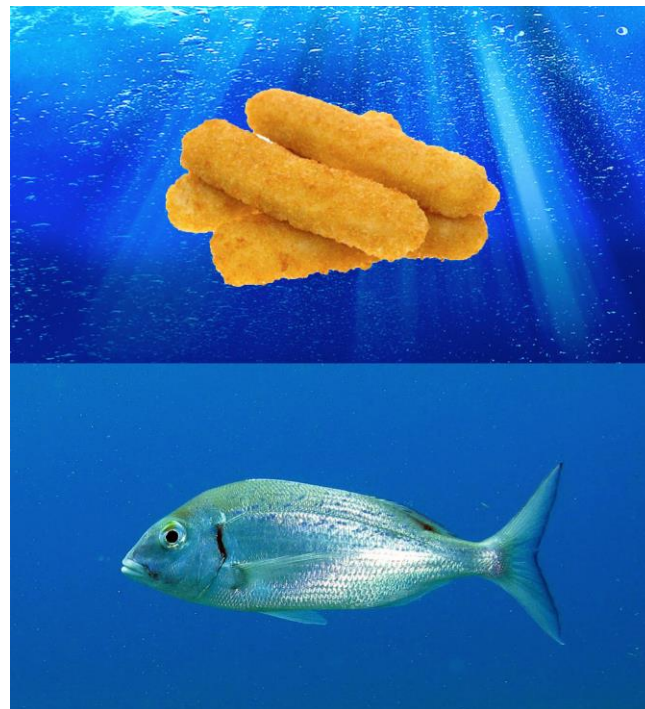
All monosaccharides and disaccharides **added to foods** by the manufacturer, cook or consumer, **plus sugars naturally present in honey, syrups and unsweetened fruit juices** fruit purees and pastes and vegetables in pureed and juice form (PHE, 2015-2016)

## ULTRA-PROCESSED FOODS DEFINITION

Mass produced **packaged goods**

Breads and buns; sweet or savoury packaged snacks; industrialised confectionery and desserts; sodas and sweetened drinks; meatballs, poultry and fish nuggets, and other reconstituted meat products

Other substances not commonly used in culinary preparations such as **hydrogenated oils, modified starches, and protein isolates.** (Fiolet et al. BMJ 2018)



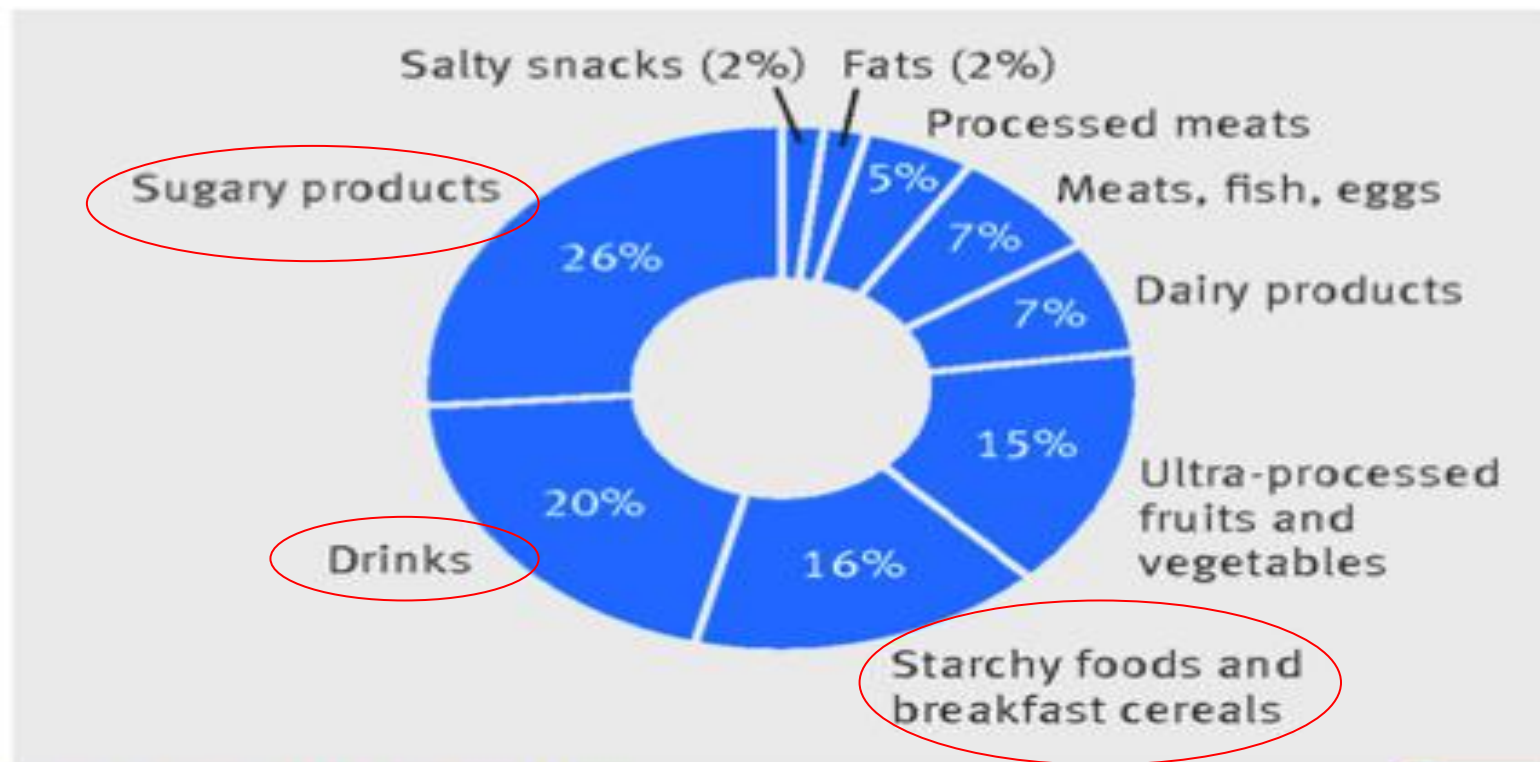
## FREE SUGAR INTAKE NDNS 2015-2016

**Table A Average daily intake of free sugars for NDNS RP UK Years 7 and 8 (combined) (2014/15-2015/16)**

	NDNS age groups (years)								
	1.5-3 sex-combined	4-10		11-18		19-64		65+	
		Boys	Girls	Boys	Girls	Men	Women	Men	Women
Free sugars intake (g/day)	32.6	54.5	49.9	71.6	62.4	64.3	50.0	61.4	40.1
Free sugars intake (% total energy)	11.3	13.6	13.4	13.9	14.4	11.1	11.2	12.1	10.4
% with intakes below or equal to 5% total energy <sup>a</sup>	13	3	1	5	6	13	13	9	16
<i>Bases (unweighted)</i>	250	276	238	270	272	450	632	141	194

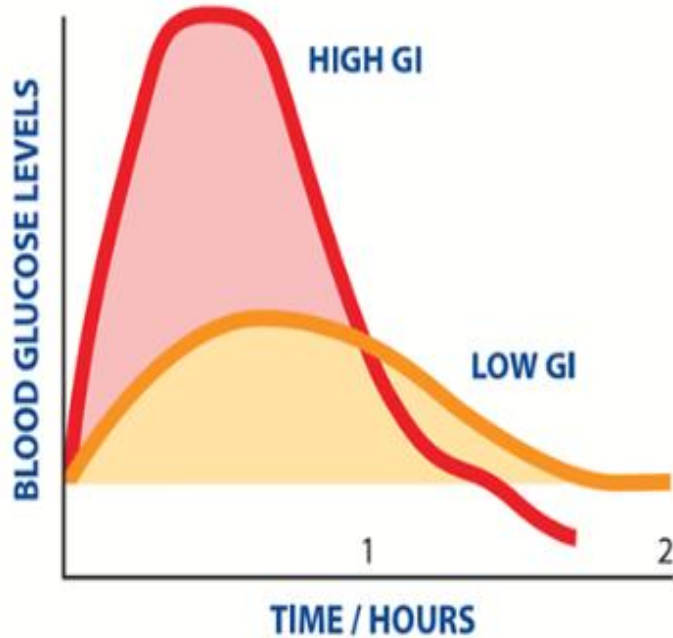


**Relative contribution of each food group to ultra-processed food consumption in diet.**



Thibault Fiolet et al. BMJ 2018;360:bmj.k322

# GLYCEMIC INDEX OF CARBOHYDRATES



- The GI index: Ranking of carbohydrate in foods according to how they affect blood glucose levels of an individual
- Low GI carbs are more slowly digested and metabolised
- GI does not take portion size into account

Low GI = 55 or less

Medium GI = 56 - 69

High GI = 70 or more

Bran flakes : 77

White Rice: 87

Dates: 103

Watermelon: 80

## GLYCAEMIC LOAD

- GL is the amount of carbohydrate found in a portion of food
- Use GI to help decide which foods to eat and GL to decide how much of that food to eat

Food	GI	Serving	GL	Carb per serve
Whole meal pasta (cooked)	58	180g	29	50g

**Low GL:** 0 to 10    **Medium GL:** 11 to 19    **High GL** 20 and over

	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	Daily totals	
Su 26/11											22.3							19.7								Average (2): 21mmol/L
Mo 27/11							22.6					16.6		15.4								13.6			22.6	Average (2): 14.5mmol/L
Tu 28/11						0.1*																		0.1*		Average (3): 20.6mmol/L
We 29/11														13.4				16.1								Average (2): 14.8mmol/L
Th 30/11													17.8				8.9					12.3				Average (3): 13mmol/L
Fr 1/12													15.7									14.5				Average (2): 15.1mmol/L
Sa 2/12	23.4																13.4									Average (2): 18.4mmol/L
Su 3/12		21.5															14.9				7.8					Average (3): 14.7mmol/L
Mo 4/12		25.5										16.7						18.2						25.3		Average (4): 21.4mmol/L
		0.1*																								
Tu 5/12														14.2						13.9		14.4				Average (3): 14.2mmol/L
We 6/12											11.8	15.0	15.1	14.9										18.5		Average (5): 15.1mmol/L
														0.1*												
Th 7/12									16.0							9.3								14.3		Average (3): 13.2mmol/L
Fr 8/12												17.9				14.6		4.8					14.3			Average (4): 12.9mmol/L
Sa 9/12			24.2									19.4														Average (2): 21.8mmol/L
Su 10/12	22.6																									Average (2): 20.2mmol/L
Mo 11/12								19.0				18.6											17.8			Average (3): 20.1mmol/L
Tu 12/12																							22.8			Average (3): 13.9mmol/L
We 13/12									18.7							13.1									21.0	Average (2): 15.9mmol/L
Th 14/12							13.1						14.0													Average (2): 13.6mmol/L
Fr 15/12																		12.9								Average (1): 12.9mmol/L
Sa 16/12														17.4												Average (1): 17.4mmol/L
Su 17/12								26.0	24.1									6.4							18.0	Average (4): 18.6mmol/L
									0.2*																	
1/12								21.1							15.2						12.2					Average (3): 16.2mmol/L
2/12														15.6											14.6	Average (2): 15.1mmol/L
3/12																									23.0	Average (1): 23mmol/L
	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00		





## BACK TO BASICS: EAT REAL FOOD



- Educate yourself & your patient
- Avoid highly processed foods
- Focus heavily on what you CAN enjoy rather than what you should limit (meat, fish, eggs, vegetables, most fruits, nuts, dairy, low GI carbs)
- Reconsider “low fat” products
- Low GI carbohydrates with portion control
- Support and encouragement from HCP’s
- Take an interest

## RESOURCES

- Diabetes.co.uk - Low Carb Program
- Local cooking classes in your area (Cook & Eat)
- Public Health Collaboration - sugar infographics
- Carbs & Cals (Book or App)
- Diabetes UK - 1 week low carb meal plan
- Your local resources
- Student/work experience/ volunteer project

# REFERENCES

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