
ymca
awards

YMCA Awards

Level 3 Nutrition to support physical activity

2018

Level 3 Nutrition to support physical activity

Carbohydrate

Dietary role of carbohydrate

The main function of carbohydrates is to provide the body and brain with energy

UK dietary guidelines

The Government's current healthy eating advice, illustrated by the Eatwell guide recommends that just over a third of an individual's diet should be made up of starchy foods, such as potatoes, bread, rice and pasta, and another third should be fruit and vegetables. This means that over half the daily calorie intake should come from starchy foods, fruit and vegetables

Energy value of carbohydrate

1g of carbohydrate provides 4kcal energy

Dietary fibre

- Non-starch polysaccharide (NSP)
- As well as energy, carbohydrate foods also supply fibre
- Two types of fibre - soluble and insoluble

Dietary fibre

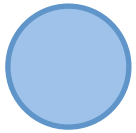
Soluble fibre	Insoluble fibre
• Oats • Barley • Pulses • Fruit	• Wheat bran • Whole grain bread and cereal • Skin on fruits and vegetable

Dietary fibre

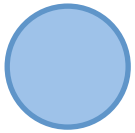
- Adds bulk to the diet
- Delays emptying of stomach after a meal
- Remains intact as it passes through alimentary canal
- Adds bulk to waste, which helps with elimination
- May help prevent constipation, bowel cancer

Structure of carbohydrate

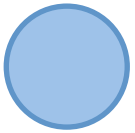
Simple Sugars
Monosaccharides – single sugar molecules



Glucose

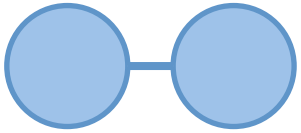


Fructose

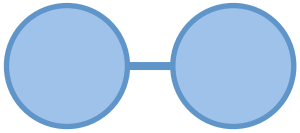


Galactose

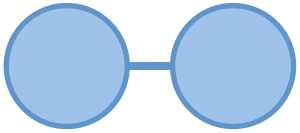
Disaccharides – two sugar molecules



Maltose

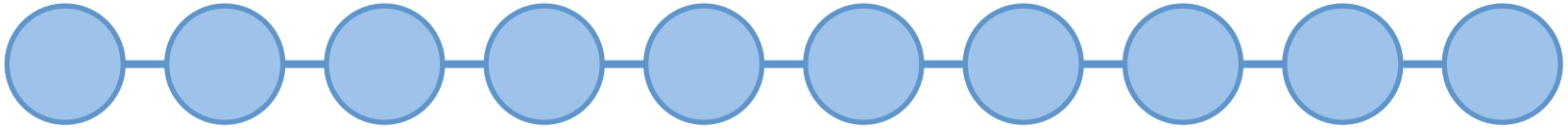


Lactose



Sucrose

Complex Carbohydrates
Polysaccharides - long chain sugar molecules



Sources of carbohydrate

Simple (sugars)	Mix of Both	Complex (starches and fibres)
Table sugar (sucrose)	Biscuits	Wheat (bread, pasta)
Fruit (fructose)	Cakes	Oats
Sweets	Sugary breakfast cereals	Corn
Jam	Starchy fruit (banana)	Barley
Marmalade	Pastries	Potatoes
Honey		Rice
Energy drinks (glucose)		Beans
Soft drinks		Peas
Milk (lactose)		Lentils
Energy gels		Chick peas
		Vegetables

Recommendation

For health, it is recommended that an individual's diet should be based on low glycaemic index (GI) foods in order to prevent diseases such as coronary heart disease, diabetes and obesity

A diet too high in carbohydrates can upset the delicate balance of the body's blood sugar (glucose) level, resulting in fluctuations in energy and mood and feelings of irritability and tiredness

In the past it was thought that simple carbohydrates caused a rise in blood-sugar levels, and therefore a rise in insulin levels followed by a 'rebound' low drop in blood sugar

It is now known that other factors also affect blood-sugar levels, including presence of other food components, such as fibre, protein and fat

The GI indicates the rise in blood sugar levels based on ingesting a particular carbohydrate, by comparison to that of pure glucose (GI of 100)

- A high GI food (70 or more)* produces a rapid rise in blood-sugar levels
- A moderate GI food (between 56 and 69)* has a moderate rise
- A low GI food (under 55)* causes a slow rise (slow-release carbohydrates)

*These values vary according to different GI charts

Most foods have an index value of 20 -100 and the GI values refer to the single foods when eaten on their own rather than part of a meal, therefore GI levels are only a rough guide

Foods with a high GI are not necessarily unhealthy foods e.g. crisps have a medium GI but a baked potato has a high GI. A baked potato is better for health than crisps, which are higher in fat and salt

Foods with a lower GI are not necessarily healthy foods e.g. chocolate and ice cream have a low-to-medium GI

The glycaemic load

The glycemic load is a classification of different carbohydrates that measures their impact on the body and blood sugar

The glycemic load details the amount of carbohydrates a food contains and its glycemic index, a measurement of its impact on blood sugar

Factors affecting Glycaemic Index (GI) and Glycaemic Load (GL)

- Manufacturing processes
- Type of starch
- Cooking method
- Food combinations
- Fibre content

Over consumption of carbohydrate

- No known clinical condition associated with over consumption of carbohydrate
- Too many total kcals can lead to obesity
- Too many simple carbohydrates (sugars) can cause dental decay
- Over consumption of fibre can irritate the gut and decrease transit time of food, limiting the absorption time for nutrients

Under consumption of carbohydrate

Low carbohydrate diets can lead to:

- Insufficient glycogen stores giving low energy and causing gluconeogenesis (breaking down muscle for energy)
- Insufficient fibre intake leading to constipation and digestive disorders


ymca
awards