BDA The Association of UK Dietitians

Food Fact Sheet

Carbohydrates

We need carbohydrates in our diet every day. This Food Fact Sheet will tell you about the different types of carbohydrates and the best way to get them from our food.

Carbohydrates are made up of individual sugar units. Different types of carbohydrates are grouped by the number of sugar units they contain and how these units are linked together - the table below shows this.

Types of carbohydrate	Description	Food example
Sugars	A simple sugar or monosaccharide is a carbohydrate with one unit of sugar.	Fructose (fruit sugar) Glucose (the main form in which carbohydrate circulates in our body as blood sugar) found in table sugar, honey, soft drinks and confectionery.
	A disaccharide is a carbohydrate with two units of sugar.	Sucrose (table sugar) Lactose (milk sugar)
Starches	Complex carbohydrates or polysaccharides have more than two units of sugar linked together.	Starch found in cereal grains including bread, flour, rice, pasta, couscous and breakfast cereals. Some fruits and vegetables especially potatoes, root vegetables and pulses contain a mixture of sugars and starches.
Dietary fibre	Carbohydrates found in plant cell walls are known as non-starch polysaccharides (NSP). We cannot digest them but they are a major component of dietary fibre.	Root vegetables, nuts and seeds, oats, fruit, cereals and wholemeal bread.

Why do we need carbohydrates?

Carbohydrates provide our main energy supply for the body to keep you and your organs functioning. Starches and fibre sources are important to:

- help regulate blood sugar levels
- prevent use of protein for energy (it is required for other vital functions)
- give a feeling of fullness (assisting weight control)
- dietary fibre helps protect against heart disease and cancer and helps prevent constipation.

What happens if we don't get enough carbohydrate?

Eating too little carbohydrate may lead to low blood sugar levels – called 'hypoglycaemia', leaving you feeling weak and light headed. It can also affect concentration as your brain needs a good supply of fuel to think and learn. Hypoglycaemia is a particular risk for people with diabetes and very active sports people.

If we eat too little carbohydrate our body will begin to use up some stored fat but quickly moves on to burning protein tissue such as in the heart and muscles.

How are carbohydrates used for energy?

We break down most carbohydrates in the gut and absorb them into our blood stream as their individual sugar units. Simple carbohydrates usually digest quickly giving a rapid rise in blood sugar. Complex carbohydrates take longer to break down into their individual sugar units before they can be absorbed, resulting in a slower rise in our blood sugar levels.

Sugar in the blood is carried into cells such as the muscles and brain with the help of the hormone insulin. We convert any sugar the cells do not need immediately from glucose to glycogen and store it in the liver and muscles for use at a later date. When the stores are full we covert any excess to body fat.

How much carbohydrate should we eat?

Half of our energy intake should come from carbohydrate; we should aim to make 'starchy' carbohydrates the base and bulk for each meal and snack. Starchy foods are a good source of energy and fibre and also contain calcium, iron and B vitamins. Choose wholegrain starchy foods as they contain more nutrients.

Sugary foods and drinks generally do not contain many other nutrients so have them occasionally in small amounts, preferably after a fibre rich meal.

Aren't carbohydrates fattening?

We get energy from carbohydrates, protein, fat and alcohol in our diet. Any extra (unneeded) energy we take in will be converted to fat no matter what the source. Sometimes people think starchy foods are fattening however, the same amount (in weight) of carbohydrate contains less than half the calories of fat. Studies have also shown carbohydrates are better at satisfying our hunger.

Can 'low-carbohydrate' diets help with weight loss?

'Low-carbohydrate' diets are sometimes used for weight loss. In the short term they can lead to side effects such as constipation, headache, bad breath and nausea. In the longer term, cutting out any food group can be bad for health because you risk missing out on vital nutrients. Low-carbohydrate diets tend to be high in fat. Eating a high-fat diet (especially one rich in saturated fat from foods such as meat, cheese, cream and butter) could increase the chances of developing heart disease. Low -carbohydrate diets may also restrict the amount of fruit, vegetables and fibre, all of which are vital for good health, including reducing cancer risk.

There is more research needed into how safe or effective low-carbohydrate diets are and following a low-carbohydrate diet does not seem to help people lose weight and keep it off.

What does the Glycaemic Index of carbohydrates mean?

Different carbohydrate containing foods are digested and absorbed at different rates. The Glycaemic Index (GI) is used to identify which carbohydrates are quickly broken down to glucose (high GI) and which are slowly broken down (low GI). Food with a high GI (e.g white bread, crisps and carrots) will cause a fast rise in your blood sugar levels followed by a rapid fall. A food with a low to moderate GI (e.g. wholemeal pasta, oats, beans and yoghurt) will cause a slower rise and fall.

GI is a well known dieting tool, however it can be restricting as it measures foods per 50g of carbohydrate provided and not by portion size, and so foods like carrots are included in the high GI list along with other important fruits and vegetables.

What about Glycaemic Load?

Glycaemic Load (GL) is a sum which takes into account the GI of a food and the available carbohydrate content in a serving of that food. Like GI the higher the GL, the faster the expected rise in blood sugar.

For example, carrots have a high GI but a low GL. This is because GI is based on the rise caused by consuming 50g of carbohydrate from any food. So to get 50g of carbohydrate from carrots you would need to eat around 700g of carrots– about five whole carrots to cause this blood sugar rise. As a portion of carrots eaten is much smaller at 60g rather than 700g, carrots can be considered as having a low GL and therefore can be included in your diet.

Summary

Carbohydrates are an important part of your diet and should make up half of each meal. Whenever possible choose wholegrain 'starchy' carbohydrates as they contain additional important 'nutrients' for the body. Carbohydrates are a healthy filling choice; they are better at satisfying our hunger than fatty/ sugary foods which also contain more calories. So forget those myths about carbohydrates being bad and don't be tempted to cut out those slow releasing carbohydrates.

Further information: Food Fact Sheets on other topics including Diabetes, Sugar, Glycaemic Index and Wholegrains can be downloaded at **www.bda.uk.com/foodfacts**

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The information sources used to develop this fact sheet are available at www.bda.uk.com/foodfacts