Confused about... Carbohydrates?

What are carbohydrates?

Carbohydrates (or carbs) include:

- The sugars and starches which provide with an important source of energy (Calories) in our diets.
- Dietary fibre.

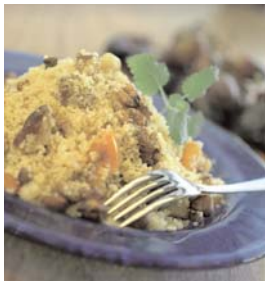
All types of carbohydrate consist of individual sugar units. What makes them different is the number of sugar units they contain and how these are linked together.

- A carbohydrate with one unit of sugar is called a simple sugar (monosaccharide). Examples include both fructose (fruit sugar) and glucose (the main form in which carbohydrate circulates in our body as blood sugar).
- A carbohydrate with two units of sugar is called a disaccharide. Sucrose (table sugar) and lactose (milk sugar) are examples.
- Complex carbohydrates, also known as polysaccharides have more than two units of sugar linked together. Starch, a complex carbohydrate found in cereal grains and some fruits and vegetables, is made of many units of glucose.
- Some carbohydrates such as cellulose 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.

How do we get carbohydrates from the diet?

The main sources of carbohydrates in our diet are;

- Foods made from cereal grains (e.g. bread, flour, rice, pasta, and breakfast cereal). These foods give us mainly complex or starchy carbohydrate.
- Fruit and vegetables especially potatoes, root vegetables (e.g. carrots) and pulses (beans and lentils) contain a mix of starches and sugars.



- Lactose which is found in milk.
- Table sugar, honey, soft drinks and confectionery provide mainly simple carbohydrates.

We break down most carbohydrates in the gut and absorb them into our blood stream as individual sugar units. We generally digest simple carbohydrates quickly giving a rapid rise in blood sugar levels.

In contrast, complex carbohydrates (such as starch) need time to be broken down into their individual sugar units before they can be absorbed. The result is a much slower rise in our blood sugar levels. Once in the blood, the sugar is carried into cells such as the muscles and brain with the help of insulin, a hormone secreted by the pancreas. Here it provides a source of vital fuel, for example to help our muscles work and our brain cells to work properly. We convert any glucose the cells do not need immediately to glycogen (animal starch) and tuck it away as stored energy in the liver and muscles for use at a later date. Once these stores are full we convert any excess into body fat.

What happens if we don't get enough carbohydrate?

Eating too little carbohydrate may lead to low blood sugar levels (hypoglycaemia) which can leave us feeling weak and light headed. It can also make it difficult to concentrate as the ability to think and learn comes from an adequate supply of fuel to the brain. Hypoglycaemia is a particular risk for some people with diabetes who are on tablets or insulin. It can also affect very active sports people, who may feel exhausted when their blood sugar and muscle glycogen stores run low.

If we eat too little carbohydrate, over time our body will begin to use up some stored fat but quickly moves on to burning its own protein tissue such as in the heart and muscles. A low intake of wholegrain cereals, fruit and vegetables rich in indigestible carbohydrate or NSP can also lead to bowel problems such as constipation.

Research shows that in the long term high carbohydrate diets are the most beneficial for health. Dietary guidelines advise that we should be getting about half of our energy intake from carbohydrate. We should eat more starchy foods (e.g. bread, rice, pasta, breakfast cereals, oats and chapattis) preferably in wholegrain forms.

How much carbohydrate should we eat?

Starchy foods are good source of energy and fibre but they also contain calcium, iron and B vitamins. About a third of the food we eat should be carbs. In practice this means making 'starchy' carbohydrate foods the base and bulk for each meal and snack. Sugary foods such as table sugar, soft drinks and sweets, generally contain few other nutrients and are recommended only on a more occasional basis. For more information see the BDA food fact sheet 'Getting the Balance Right - A Guide to Healthy Eating'

Aren't carbohydrates fattening?

If we take in more food energy than we burn up, no matter what the source, the excess will be converted to fat. Since sugary foods taste good and can be high in calories (chocolate, cakes, ice cream, biscuits, puddings), it can be easy to consume too many calories from sweet foods and drinks.

Sometimes people mistakenly think starchy foods such as bread and potatoes are fattening. However weight for weight carbohydrates contain less than half the calories of fat and studies show they are much better at satisfying our hunger. Watch out for the added fats used for cooking and serving, because it is these that increase the calorie content (e.g. fried potatoes).

Can low-carbohydrate diets help with weight loss?

'Low-carbohydrate' diets which cut out most starchy foods 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 higher in fat, and 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.

It's fair to say the jury is still out on how safe or effective low-carbohydrate diets really are. However there does not seem to be any advantage in following a low-carbohydrate diet in terms of sustained weight loss.

What does the Glycaemic Index of carbohydrates mean?

Different carbohydrate-containing foods are digested and absorbed at different rates.

The Glycaemic Index (GI) is the classification used to identify which carbohydrates are quickly broken down to glucose (high GI) and which are slowly broken down (low GI).

Examples of medium and low GI carbohydrate foods include:

- Wholegrain and seeded bread
- Pasta, basmati rice
- Oats and muesli
- Beans and pulses
- Most fruit and vegetables including sweet potatoes and new boiled potatoes in their skins
- Milk and yogurt.

For more detailed information on carbohydrates go the BDA website (www.bda.uk.com/foodfacts) to view other food fact sheets on: Diabetes, Sugar, Glycaemic Index, Wholegrains, Food and Mood and Fuel for Sport.