Background information for teachers

Introduction

The British Cheese Board education resources have been designed by practising teachers to help fellow teachers deliver various parts of the National Curriculum in England in a range of different subjects using cheese as a topic. The following subjects are covered:

- Foundation Stage KS1
- PSHE/Citizenship KS2
- Geography KS2
- Science KS2
- Design & Technology KS2
- Food Technology KS3

This introduction provides background information for teachers about food, healthy eating and cheese. It is intended that this information will be used by teachers to support their own knowledge and to answer pupils' knowledge-related questions.

The accompanying resources contain separate appendices that provide photocopiable resources for use in the various exercises.

At the start of each module information is given about the various elements of the National Curriculum for England that the pack will help deliver.

Safety

All activities provided in the pack have been trialled with pupils. It is vital that teachers have full information regarding their pupils' food allergies and medical conditions before undertaking activities that involve handling, smelling or tasting foods.

Teachers should also ensure that all sessions involving food comply with their school's health & safety guidelines.

Facts about food and healthy eating

What is a 'good' food?

Contrary to popular belief foods should not be classed as 'bad' and 'good'; there are 'healthy' and 'unhealthy' diets, but no 'healthy' and 'unhealthy' foods. Instead, what is important is that people eat a variety of foods to provide a balance of the nutrients that are required to be healthy. It is the overall balance of food choice that counts.

What is a balanced diet?

A balanced diet is one that consists of a variety of foods from the different food groups, whilst providing appropriate amounts of energy and nutrients to promote good health.

Which foods make up a balanced diet?

A balanced diet consists of foods from the five different food groups:

- bread, rice, potatoes, pasta and other starchy foods 33%
- fruit and vegetables 33%
- milk and dairy foods 15%
- meat, fish, eggs, beans and other non-dairy sources of protein 12%
- foods and drinks high in fat and/or sugar 7%.

The eatwell plate

The eatwell plate is divided into sections of different sizes – the size of each section shows the approximate proportion of your diet that should come from that food group. So, try to eat:

- *plenty of fruit and vegetables; they contain vitamins and minerals including vitamin C and folate*
- *plenty of bread, rice, potatoes, pasta and other starchy foods – choose wholegrain varieties whenever you can; these foods should make up about a third of the diet and they are fuel for your body*
- *some milk and dairy foods; milk, hard cheese and yogurt provide calcium which is important for healthy bones*
- *some meat, fish, eggs, beans and other non-dairy sources of protein; these foods provide protein for growth and development and a range of vitamins and minerals such as iron*
- *just a small amount of foods and drinks high in fat and/or sugar.*

It is recommended that people try to eat a wide variety of foods from these groups, consume foods and drinks from the fifth food group in moderation and eat at least five portions of a variety of fruits and vegetables each day.

It is also recommended to drink at least six to eight mugs, cups or glasses (approximately 1.2 litres or just over two pints) of fluid every day; more during hot weather or exercise. Water, milk, tea, coffee and fruit juice all count.

Which foods are useful for building healthy bones?

Bone is a living tissue consisting of crystals of mineral bound to protein. Calcium is the most important mineral in bone and is key to helping build and maintain healthy bones; the protein in bone is called collagen.

Childhood is an important time for building strong bones, and getting enough calcium is an important part of this. The teenage years in particular are crucial for bone building, and calcium requirements are greater than at any other time in life. An adequate calcium intake is also important throughout adult life as bones continue to strengthen until our mid thirties. After this we naturally begin to lose bone. The loss of bone as we age can eventually result in fragile bones which are at an increased risk of fracture.

Eating a balanced diet that is rich in calcium, provides protein and some vitamin D is important for bone health. Taking regular weight-bearing exercise (such as walking or running) can help to keep bones healthy too; like muscles, bones suffer if they're not used.

Vitamin D is needed to help the body absorb calcium, making it important for bone health. Some vitamin D is made in the skin during exposure to the ultraviolet component of sunlight, so getting outdoors regularly in the summer (taking care not to burn) will help build up vitamin D levels. Some vitamin D comes from our diet. Sources of vitamin D include fortified breakfast cereals, meat, oily fish and margarine.

Which foods are good sources of calcium?

Milk, hard cheese and yogurts are all a source of calcium and are in fact the main providers of calcium in the UK diet. Better still, thanks to their unique make-up, the calcium in dairy products is easy for the body to absorb and use.

Other food sources of calcium include:

- oily fish with soft edible bones such as sardines
- calcium-fortified soya drinks and fortified orange juices
- calcium-fortified soya and rice desserts
- tofu
- some nuts – like almonds, Brazil nuts, hazelnuts
- sesame seeds
- dried figs
- okra
- kale.

What is 'lactose intolerance'?

Some people do not have the ability to digest lactose, the sugar found naturally in milk. This means that lactose can pass undigested into the large intestine and give rise to symptoms of lactose intolerance including bloating and stomach pain. It has been estimated that around 5% of the UK population is unable to digest lactose, however this figure varies within different ethnic groups.

Many people with problems digesting lactose can tolerate small amounts and do not have to avoid all dairy foods. Hard cheeses such as Cheddar contain virtually no lactose so are well tolerated, and live yogurt cultures have been shown to improve lactose digestion. Most people who experience lactose intolerance can also consume moderate amounts of milk without problems, particularly if it is taken as part of a meal, rather than on an empty stomach, or distributed throughout the day.



What is the recommended daily intake of calcium?

The table below shows the recommended calcium intake at different ages, and the portion sizes of dairy products that can help meet these needs.

Recommended daily intake of calcium

Age/sex	*Calcium needs**	*Portion sizes (mg/day)*
1 – 3 years	300	100ml whole/semi-skimmed milk** (122mg/124mg) 80g yogurt (160mg) 15g cheese (111mg) *These portion sizes provide approximately 395mg of calcium*
4 – 6 years	450	130ml semi-skimmed milk (161mg) 100g yogurt (200mg) 20g cheese (148mg) *These portion sizes provide approximately 510mg of calcium*
7 – 10 years	550	150ml semi-skimmed milk (186mg) 125g yogurt (250mg) 25g cheese (185mg) *These portion sizes provide approximately 620mg of calcium*
Male 11 – 18 years	1,000	250ml semi-skimmed milk (310mg) 200g pot of low-fat yogurt (324mg) 45g of cheese (378mg) *These portion sizes provide approximately 1,010mg of calcium*
Female 11 – 18 years	800	200ml semi-skimmed milk (248mg) 200g pot of low-fat yogurt (324mg) 30g of cheese (small matchbox size) (252mg) *These portion sizes provide approximately 825mg of calcium*
Men and women 19 years and over	700	200ml semi-skimmed milk (248mg) 150g pot of low-fat yogurt (243mg) 30g of cheese (small matchbox size) (252mg) *These portion sizes provide approximately 740mg of calcium*

** This is the Reference Nutrient Intake (RNI); a figure set by the Department of Health which describes the amount of a nutrient that is enough to meet the dietary needs of most people in a group (97%).*

*** The Department of Health recommends that semi-skimmed milk may be introduced to children from the age of two years, providing they are good eaters and growing well, otherwise whole milk should continue to be given.*

Source: Calcium Factsheet © The Dairy Council 2010.

Calcium is also important for healthy teeth, and small cubes of hard cheese can make a tooth-friendly snack.

Facts about cheese

What nutrients are provided by cheese and what are their functions?

Hard cheese is a source of the following nutrients:

Protein: essential for growth and development and also important for bone and muscle maintenance

Vitamin B12: helps make red blood cells, which carry oxygen around the body, but is also required for healthy nerves and normal function of the immune system

Calcium: vital for the formation and maintenance of strong bones and teeth

Phosphorus: important for strong bones and teeth.

Cheesy snacks

Cubes of cheese can make a useful tooth-friendly snack; other quick and easy ways to get cheese into the diet include:

- tuna and cheese jacket potato
- cheese on pizza slice
- cheesy pasta bake
- cheese on crumpets or toast.

There are lots of recipe ideas using cheese on the British Cheese Board's website – **www.britishcheese.com**

How many cheeses are there?

There are over 700 named cheeses made in the UK. Many others are made around the world.

Contribution of 30 grams of Cheddar cheese to the nutrient intake of young people aged 7 to 18 years – % of RNI or GDA

		30 grams of Cheddar cheese contains:	*Male & Female 7 to 10 %*	*Male 11 to 14 %*	*Male 15 to 18 %*	*Female 11 to 14 %*	*Female 15 to 18 %*
Energy	Kcal	125	7	5	5	6	6
Protein	grams	7.6	31.8	13.9	13.9	16.9	16.9
Fat	grams	10.5	15.0	11.0	11.0	15.0	15.0
Saturated fat	grams	6.5	32.6	21.7	21.7	32.6	32.6
Minerals							
Sodium	milligrams	217	16	9	9	9	9
Calcium	milligrams	222	40	22	22	28	28
Phosphorus	milligrams	152	34	20	20	24	24
Vitamins							
Vitamin A	milligrams	116.1	33.2	19.3	16.6	19.3	19.3
Riboflavin	milligrams	0.112	12.0	10.0	9.23	10.91	10.91
Vitamin B12	micrograms	0.7	70.0	58.3	46.7	58.3	46.7

Note: GDAs (Guideline Daily Amounts) used for total energy, fat and saturated fat, and sodium.

How is cheese made?

The basic principles for making cheese are the same for the majority of cheeses. Essentially, this involves forming curds and whey, draining the whey and then treating the remaining curds to produce the type of cheese required. There is more work to do on harder cheeses (e.g. Cheddar), which need to have less water in the end product, than for soft cheeses (such as cottage cheese). Cottage cheese has a high water content in the end product and little further treatment of the curds will take place. In greater detail the process involves:

- raising the acidity in the milk (which has usually been pasteurised) to aid separation through the addition of special (friendly) bacterial cultures (starters). The bacteria feed on the lactose in the milk converting it to lactic acid. A coagulating agent or setting agent (rennet or – now more normally – a non-animal rennet substitute) is then added to coagulate or set the curds
- removing some of the whey (which is made up of water, lactose, some whey proteins and a small amount of cream)
- leaving the remaining curds (a mixture of cream, protein and water) to sour naturally
- treating the curds in a variety of ways according to the type of cheese being made – cutting, stirring or heating depending upon the amount of additional whey to be released and the required cheese texture
- milling, salting, mixing and placing the curds in moulds to shape the cheese
- pressing (more for hard cheeses such as Cheddar and Double Gloucester than for the more crumbly, semi-hard cheeses such as Lancashire, Wensleydale and Cheshire). Stilton is never pressed.

The harder cheeses can generally be stored for longer periods (up to two years) than the semi-hard cheeses, such as Cheshire, Wensleydale and Lancashire, which are normally sold at around three or four weeks of age but may be kept longer to give a stronger flavour profile.

*(Note: Visit **www.britishcheese.com** to download a video on cheese production.)*

Can people who follow a vegetarian diet eat cheese?

Although traditionally cheeses tended to be made using animal rennet, virtually all cheese sold or produced in the United Kingdom today is made from non-animal rennet. The Vegetarian Society supports the inclusion of cheese within a balanced vegetarian diet.

How much cheese do we eat?

Cheese consumption in the United Kingdom is among the lowest within the countries of the European Union, with an average per head consumption among cheese consumers of just 31 grams per day, equivalent to a small matchbox-sized piece of Cheddar), compared with over 50 grams per person per day in the rest of the EU. In France, Germany, Italy and Greece the figure is over 60 grams per person per day.

Fat in cheese

Cheese is a concentrated form of milk containing a mixture of water, fat, protein, vitamins and minerals, typically:

	Whole milk	*Hard cheese*
Water	86.0%	36.0%
Fat	4.0%	35.0%
Protein	3.3%	26.0%
Carbohydrate (lactose)	4.6%	0.1%

How are cheeses classified?

One way of classifying cheeses is according to the water content.

Cheese classification	*Water content*	*Examples of cheeses*
Very soft	80%	Spoonable cheeses e.g. cottage cheese
Soft	50 – 70%	Spreadable cheeses e.g. Camembert, Brie, Philadelphia
Semi-hard	40 – 50%	Sliceable cheeses with a slightly rubbery texture e.g. Gouda, Edam; Crumbly cheeses e.g. Lancashire, Caerphilly, Wensleydale, Cheshire
Hard	30 – 48%	Sliceable cheeses with a firm, slightly springy or crumbly texture or very firm/dense texture e.g. Cheddar, Double Gloucester, Red Leicester

In addition, cheeses are often given strength numbers by supermarkets (e.g. 1–5) that indicate their maturity. A cheese of strength 5 is mature and quite strong. One of strength 2 would have a mild flavour.

In making cheese, the lactose and a large part of the water are removed from the milk leaving a longer lasting, storable food. It takes about 280 millilitres (half a pint) to make 28 grams (1 ounce) of hard cheese, or 10 litres to make 1 kilogram. Cheese is often thought of as a high-fat food. While it does contain fat, cheese also delivers a number of other important nutrients. Most of the cheese we eat in this country has between 25 and 35% fat (i.e. 25 to 35 grams per 100 grams of cheese).

All diets require some fat, and nutritionists agree that if consuming foods high in fat it is better to opt for those that deliver other key nutrients. People do not need to remove cheese from their diet out of fear that it is fattening, especially since there are many reduced-fat and half-fat varieties available along with low-fat cottage cheeses. For those restricting the amount of fat in their diet, it may be helpful to use smaller quantities of a stronger tasting cheese. Cheese can fit well into a healthy, balanced diet, whilst providing a number of valuable nutrients. In fact one portion of Cheddar (30g) contains about 10.5 grams of fat and 125 calories, yet provides 40% of the daily recommended intake for calcium for 7 to 10 year olds, 34% of their phosphorus requirements and 70% of their recommended intake for vitamin B12 (see table on page 5).