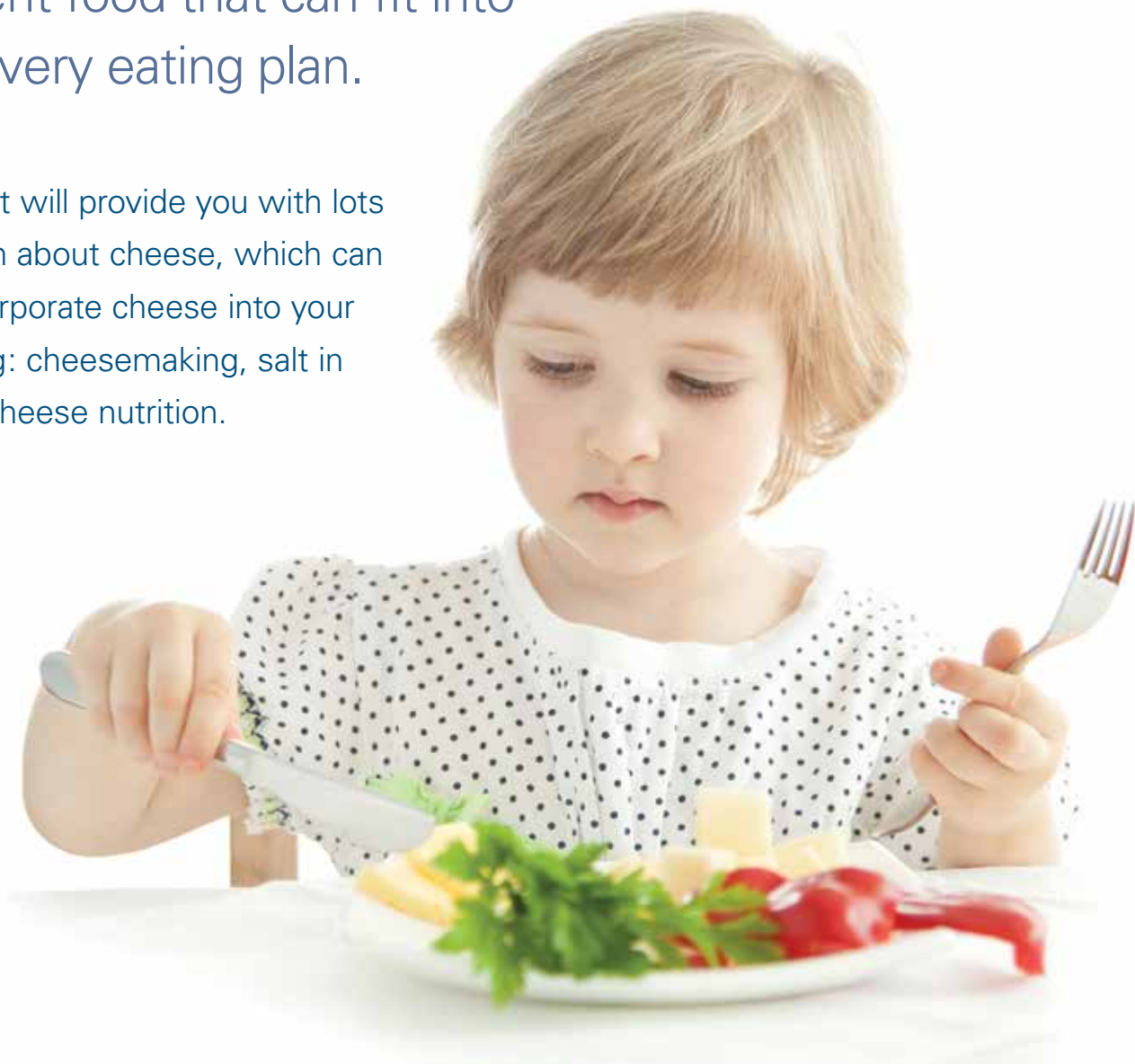


Cheese, salt and nutrition

Factsheet

Cheese is a tasty, versatile and convenient food that can fit into almost every eating plan.

This factsheet will provide you with lots of information about cheese, which can help you incorporate cheese into your diet, including: cheesemaking, salt in cheese and cheese nutrition.



Fast facts on cheese

- There are over 700 British named cheeses
- It takes 10 litres of milk to produce a kilo of hard cheese
- Cheddar is the nation's favourite cheese
- Cheese is a natural product which has been around for centuries and has a rich culture. There are mentions of cheese in the Bible and the Domesday book
- Cheese provides a variety of nutrients to the UK diet
- Cheese is made up of just a few simple ingredients – milk, a starter culture (good bacteria), salt and rennet
- The majority of cheeses in the UK use vegetarian rennet
- Salt is an integral part of cheese making. A 30 gram (30g) piece of Cheddar provides 0.5 grams of salt. That's less than one tenth of the recommended daily maximum intake of salt for an adult
- Overall, cheese contributes around 4% - 5% of the nation's salt intake
- Hard cheese is a source of protein, calcium, phosphorus and vitamin B12 for children and adults in the UK

Cheese: A few basic ingredients, a lot of variety

Natural cheese is a complex food made from just a few basic ingredients – milk, a starter culture (good bacteria), rennet (to thicken the milk) and salt.

From these simple ingredients, cheesemakers around the world have developed thousands of different varieties of cheeses. In the UK alone, we have over 700 named cheeses. Each variety of cheese has its own unique taste, texture and nutritional composition.



Table 1 – Categories of cheese in the UK and examples of cheeses in each category

Cheese Categories	Some Examples of Cheese
Hard	Cheddar, Double Gloucester
Semi-Hard	Cheshire, Wensleydale
Soft ripened or bloomy rind	Somerset Brie, British Camembert
Blue	Blue Stilton, Shropshire Blue
Washed rind	Stinking Bishop
Fresh	Mozzarella, Cottage Cheese
Blended	Stilton with Cranberries, Double Gloucester with Chives



How cheese is made

There are some basic steps involved in cheesemaking. Even small variations in the cheesemaking process can result in cheeses with remarkably different flavours and textures.

The following is a very simple guide to the basic process.

1. Cheese is a concentrated form of milk and the cheesemaking process begins with the milk being pasteurised and a starter culture being added to 'sour' and thicken it.
2. Rennet is then added to the milk to form curds. In years past, animal rennet was used but these days much of the rennet used in the UK is from non-animal sources which makes the majority of cheeses suitable for vegetarians.
3. The curds produced by the steps above are left to set.
4. In cheesemaking the curds must be separated from the whey. So, after setting, the curds are cut so that the whey is released. To produce hard cheeses, the curds are cut finely whereas to produce soft cheeses, the curds are only lightly cut.
5. After cutting, the curds are then either 'cooked' or piled on top of each other to further release the whey.
6. At this point, the curd is milled, salt is added and, for the majority of cheeses, the curd is pressed into moulds.
7. The cheese is then stored and ripened. During this phase, temperature and humidity are tightly controlled and vary according to the type of cheese being produced.

Cheese and salt

Why there is salt in cheese

Salt is an integral part of the cheesemaking process. Cheese simply cannot be made without it. It is added for safety and technical reasons as follows:

- Salt slows the development of the special bacteria used in the cheesemaking process. Without salt these bacteria would multiply uncontrollably and cause the cheese to spoil quickly.
- Salt speeds up the release of whey from the curd. This is an essential part of the production of semi-hard and hard cheeses.
- Salt acts as a preservative, preventing the growth of undesirable bacteria. This is essential for the safety of cheeses, particularly those with a longer shelf life.

- Salt is important in helping the curds to mature. A lack of salt would prevent the curds from maturing, meaning cheese will remain in its raw state and be inedible.

It's often asked why cheeses of the same type have different salt contents e.g. Cheddar. However, Cheddar cheese can be mild or mature. A mild Cheddar is only ripened and stored for a few short months whereas matured Cheddars are often stored for years before they are aged enough to reach the store shelf. In order to safely produce a 2 year old mature Cheddar, the cheesemakers must add more salt than if they were producing a mild Cheddar, to prevent bacterial growth and cheese spoilage, so the cheese remains safe to eat.

Cheese manufacturers have worked very hard to overcome technical barriers and reduce salt levels in their products. They have worked constructively and positively with government agencies to do this whilst producing products which are nutritious, safe and acceptable to the public's tastes.

The amount of salt in a portion of cheese

In the UK we don't have a standard size for a portion of cheese. However, the dairy industry generally recommends a 30g portion (small matchbox size). More recently 20g individual portion sizes of cheese have become available.

Public health recommendations in the UK are currently for children over 11 years and adults to consume no more than 6g of salt per day. So you might like to know how much salt a 20g or 30g portion of cheese provides you with, and what percentage of the recommended maximum of salt intake that represents. The following table shows that information for a number of popular cheeses.

Table 2 – The amount of salt in a 20g and 30g portion of commonly consumed cheeses and % contribution to the recommended maximum intake

Cheese	Salt in a 20g portion	% Contribution to the UK recommended maximum 6g a day	Salt in a 30g portion	% Contribution to the UK recommended maximum 6g a day
Cheddar (regular)	0.36	6	0.54	9
Cheddar-type (30% less fat)	0.36	6	0.54	9
Stilton	0.39	7	0.59	10
Red Leicester	0.33	6	0.50	8
Double Gloucester	0.34	6	0.50	8
Wensleydale	0.22	4	0.33	6
Cottage cheese	0.13	2	0.19	3
Cream cheese	0.13	2	0.20	3

If your favourite cheese wasn't included in Table 2, don't worry. It is easy for you to work out the salt content of the cheese you like. This is how you do it: First, look for the grams of sodium in 100g of food. The amount of sodium in foods is typically declared on the nutrition label on the back of the pack but may also be on front of pack depending on the food.

Once you know the amount of sodium, simply multiply that number by 2.5 to convert it to salt. You now have the amount of salt in 100g of food. But, people don't eat 100g of cheese so don't forget to work out how much salt is in the amount of cheese you are eating. The following calculation provides an example of how to work out the amount of salt in 30g (small matchbox sized) piece of Cheddar cheese.

100g of Cheddar cheese has 0.72g of sodium

(if the sodium is declared in milligrams you can convert this to grams by dividing by 1000)

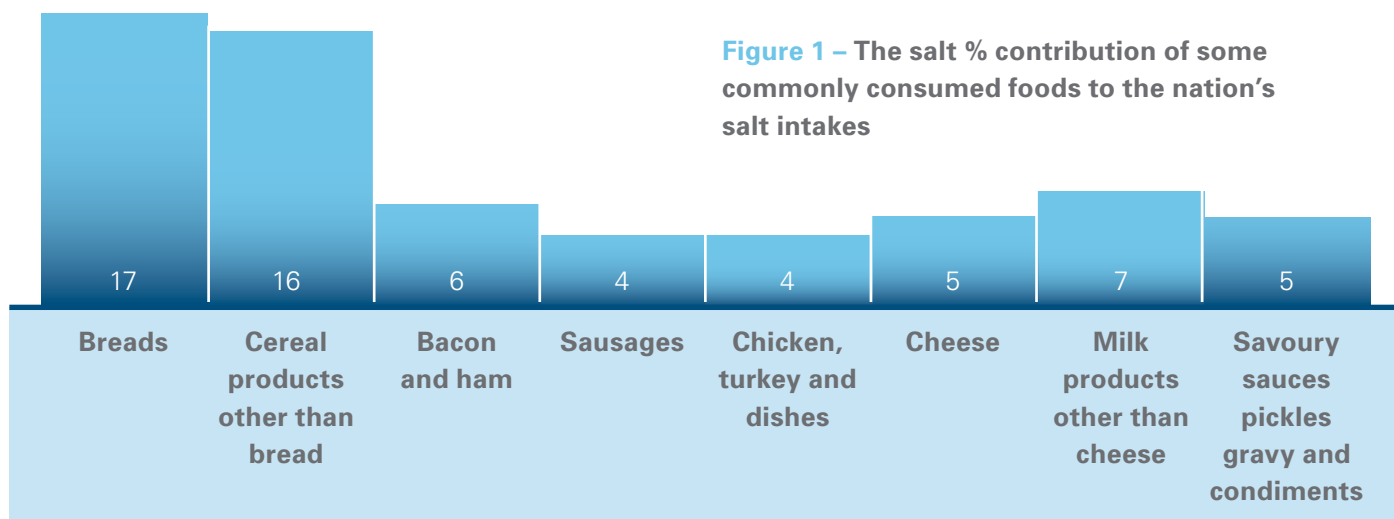
$$0.72\text{g}/100 \times 30 = \mathbf{0.22\text{g of sodium in 30g of Cheddar cheese}}$$

$$0.22\text{g of sodium multiplied by 2.5 (salt conversion factor)} = \mathbf{0.54\text{g of salt in a 30g portion of Cheddar cheese}}$$

Therefore a 30g piece of Cheddar cheese provides 9% of the recommended maximum salt intake

How much salt in the nation's diet overall comes from cheese?

With all this talk of salt you might be wondering just how much salt does cheese provide to the nation's diet. Well, according to the National Diet and Nutrition Survey, it's 4%-5%. That's probably less than you think.



Cheese nutrition made easy

Like milk and yogurt, cheese provides a number of important nutrients to the UK diet. The amount of individual nutrients cheese contains differs according

to variety. As a general rule, hard cheeses, such as Cheddar, have the highest concentration of nutrients.

In fact, hard cheese, such as Cheddar, can make a significant contribution to recommended intakes for protein, calcium, phosphorus and vitamin B12 for young people.

Table 3 – Contribution of 30g of Cheddar cheese to the nutrient requirements of young people aged 7 to 18 years

Nutrients	Percentage of Reference Nutrient Intake (RNI)* provided by 30g of Cheddar cheese					
	Male 7 to 10 years	Male 11 to 14 years	Male 15 to 18 years	Female 7 to 10 years	Female 11 to 14 years	Female 15 to 18 years
Protein	27	18	14	27	18	17
Calcium	40	22	22	40	28	28
Phosphorus	34	20	20	34	24	24
Vitamin B12	70	58	47	70	58	47

* The RNI is 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 (97.5%).

The key nutrients provided by 30g of hard cheese and their functions in the body

A 30g portion of hard cheese is a source of protein, calcium, phosphorus and vitamin B12 for adults.

Although these nutrients can individually be found in a number of foods, they come as a tasty package within cheese.

Protein, calcium, phosphorus and vitamin B12 have important roles within the body. Table 4 will show you just what functions they perform.

Table 4 – The role of protein, calcium, phosphorus and vitamin B12 in the body

Nutrient	Function within the body
Protein	<ul style="list-style-type: none"> • Needed for growth and development of bones • Helps growth and maintenance of muscles
Calcium	<ul style="list-style-type: none"> • Essential for normal bones and teeth • Important for normal blood clotting • Important for muscle and nerve function • Important for normal digestion
Phosphorus	<ul style="list-style-type: none"> • Important for normal bones and teeth • Important for the normal release of energy from foods
Vitamin B12	<ul style="list-style-type: none"> • Helps to make red blood cells, which carry oxygen around the body • Important for the normal functioning of the immune system • Important for normal nerve function

Calories, fat and saturated fat

Cheese can fit within dietary guidelines for fat and calories. Dietary guidelines suggest that around 70g of fat a day is a healthy upper limit for an adult. A matchbox-size piece of Cheddar cheese contains approximately 10g of fat; about 14% of the maximum for an adult.

EU guidelines suggest around 20g of saturated fat a day is a healthy upper limit for an average adult. A piece of Cheddar-style cheese contains 6.5g of saturated fat; about 32% of the maximum for an adult.

A moderate amount of cheese isn't over-the-top on calories either. EU guidelines suggest that the average adult should consume around 2000 calories a day; a 30g piece of Cheddar contributes just 6% of this figure.

The table below shows the calorie, fat and saturated fat content of a variety of popular cheeses.

Table 5 – Calories, fat and saturated fat content from a 30g portion of a variety of popular cheeses

Type of cheese	Calories in 30g	Fat in 30g	Saturated fat in 30g
Cheddar (regular)	125	10	7
Cheddar-type (half fat)	82	5	3
Red Leicester	120	10	6
Double Gloucester	122	10	6
Wensleydale	113	9	6
Stilton	123	11	7
Cottage cheese	30	1	1

With the many varieties of regular fat, reduced fat and half fat cheeses available there is a fat and calorie choice available for all types of dietary needs and preferences.



Bibliography

1. British Cheese Board. How is cheese made
http://www.britishcheese.com/userfiles/file/How_Cheese_Is_Made_04-10.pdf
[accessed 12/2015]
2. Department of Health (1991) Dietary Reference Values for Food Energy and Nutrients for the United Kingdom: Report of the Panel on Dietary Reference Values of the Committee on Medical Aspects of Food Policy. London: HMSO. (Report on Health and Social Subjects; 41)
3. Finglas PM et al (2015) McCance and Widdowson's The Composition of Foods, Seventh Summary edition, Cambridge: Royal Society of Chemistry
4. Bates B et al (2014) National Diet and Nutrition Survey: Results from Years 1, 2, 3 and 4 (combined) of the rolling programme (2008/2009 - 2011/2012)
https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/310995/NDNS_Y1_to_4_UK_report.pdf
5. NHS Choices. Salt: the facts <http://www.nhs.uk/Livewell/Goodfood/Pages/salt.aspx> [accessed 12/2015]
6. British Cheese Board. Salt and Cheese
http://www.britishcheese.com/userfiles/file/Salt___Cheese_04-10.pdf
[accessed 12/2015]

For details on additional information sources please contact The Dairy Council.