

What is satiety?

Satiety is the feeling of fullness and the suppression of hunger for a period of time after a meal.

The feeling of satiety occurs after a food or drink is consumed, as a result of a number of signals in the body, and continues as it enters the gut and is digested and absorbed. Feelings of satiety can influence how soon and how much you next eat.¹



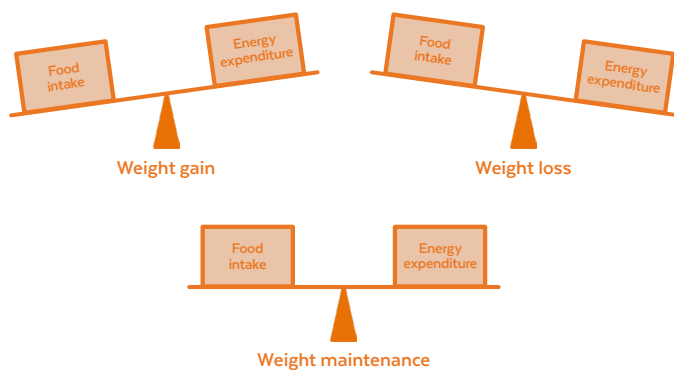
What is appetite and how is it controlled?

Appetite is our desire to eat. It is controlled by a complicated system of hormones, which are governed by the endocrine and nervous system; often referred to as the neuroendocrine system.² Appetite regulation, perception of hunger and satiety, eating behaviour, and food preferences are determined by internal (genetic) and external (environmental) factors.³

How is body weight regulated?

Energy balance, and subsequently, weight, is managed through both diet and physical activity. Energy is obtained, from the food and drink we consume, and the amount of energy we receive from each type of nutrient varies. Fat is the most energy-dense nutrient (9 kcal/g), followed closely by alcohol (7 kcal/g), protein (4 kcal/g) and carbohydrates (3.75 kcal/g).⁴

In order for individuals to maintain their body weight, energy intake must equal energy expenditure. Failure to maintain energy balance over a prolonged period of time, will likely result in weight change.⁵



Risks associated with abnormal body weight

Overweight and obesity are defined as abnormal or excessive fat accumulation that may impair health. The World Health Organization reported that, globally, in 2016, more than 1.9 billion adults aged 18 years and older were overweight. Of these, over 650 million adults were obese.⁶

Compared with those with a normal or healthy weight, overweight or obese individuals are at increased risk of many serious diseases and health conditions, including hypertension (high blood pressure), dyslipidaemia (high “bad” cholesterol levels), type 2 diabetes, coronary heart disease and stroke. It can also put individuals at risk of some cancers, contribute to, or exacerbate mental illnesses such as depression or anxiety, and lower a person’s quality of life due to chronic pain or disruption of sleep.⁷

Nutrition, appetite regulation and weight management

Nutrition plays an important role in the regulation of appetite which, in turn, may help individuals looking to manage their weight. There is evidence to suggest that the following, as part of a balanced diet, may help to regulate appetite:³

- **Include some protein at every meal**
Increased protein consumption has been shown to be associated with feelings of fullness (satiation)
- **Include plenty high-fibre foods in the diet**
(e.g., wholegrain bread/cereals/pasta, peas, beans, pulses, mycoprotein, nuts and seeds, fruit and vegetables)
Fibre-containing foods digest slowly, therefore remain in the stomach longer and result in a prolonged feeling of satiation
- **Reduce alcohol consumption**
Alcohol appears to stimulate appetite in the short term
- **Include lots of low energy-dense foods**
(e.g., fruit and vegetables, wholegrains, foods with a high water content)
These foods fill the stomach, while avoiding an excessive calorie intake
- **Chew food for longer**
It is thought that individuals may compensate for the extra time spent chewing the food by eating smaller portions
- **Avoid consuming ‘empty calories’**
(e.g., sugary drinks/sweets/chocolates)
These are high in calories that provide little nutritional benefit

Fibre and satiety

The exact relationship between dietary fibre and satiety is not yet fully understood, however, there is evidence to suggest that consumption of dietary fibre may be beneficial as part of a weight management programme.⁸

It has been argued that because it takes longer to chew high-fibre foods, the more time is allowed for the signals in the body to produce feelings of satiety, therefore leading to an increased likelihood that an individual will stop eating sooner than if they were to consume a food low in fibre.⁹

Mycoprotein and fibre

Mycoprotein is high in fibre, containing 6g per 100g of mycoprotein.¹⁰

Comparison of dietary fibre in mycoprotein vs other fibre-containing foods

Food	Approximate fibre per 100g
Mycoprotein	6.0g
Baked beans in tomato sauce	3.7g
Boiled potatoes	1.2g
Brown bread	3.6g
Brown rice	0.8g

Data source for Mycoprotein, Marlow Foods

Data source for other foods, MeReC Bulletin Vol. 14 No. 6, 2004

Quorn products are a good source of protein and fibre and can help as part of a balanced diet.

Where to find mycoprotein

Mycoprotein is the unique whole food at the heart of every single Quorn product. There is a huge range of great tasting Quorn® products and ingredients available, all of which can easily be used to recreate your favourite recipes with a nutritious and sustainable twist.

Visit www.quornnutrition.com and www.quorn.com for more information about mycoprotein, products and recipes.

References:

1. British Nutrition Foundation. Understanding satiety: feeling full after a meal. Available at: <https://www.nutrition.org.uk/healthyliving/fuller/understanding-satiety-feeling-full-after-a-meal.html?limitstart=0>. Accessed January 2020.
2. Paspala I, et al. Open Cardiovasc Med J. 2012;6:147-55.
3. Yu JH, Kim MS. Diabetes Metab J. 2012;36:391-8.
4. British Nutrition Foundation. Energy intake and expenditure. Available at: <https://www.nutrition.org.uk/nutritionscience/obesityandweightmanagement/energy-intake-and-expenditure.html?start=5>. Accessed January 2020.
5. Hill JO, et al. Circulation. 2012; 126(1): 126-32.
6. World Health Organization. Obesity and overweight. Available at: <https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight>. Accessed January 2020.
7. Centers for Disease Control and Prevention. The health effects of overweight and obesity. Available at: <https://www.cdc.gov/healthyweight/effects/index.html>. Accessed January 2020.
8. Gratz SW, et al. Eur J Nutr. 2019;58:1147-58.
9. Rebello CJ, et al. Nutr Rev. 2016;74: 131-47.
10. Finnigan TJA, et al. Curr Dev Nutr. 2019;3(6):nzz021.