

# Understanding oats and their nutritional benefits

**Welcome!**



Dr Pippa Gibson, Senior  
Nutrition Scientist, British  
Nutrition Foundation



Frances Meek, Education  
Services Manager, British  
Nutrition Foundation

## Housekeeping

- The webinar is being recorded and will be available on [www.foodafactoflife.org.uk](http://www.foodafactoflife.org.uk).
- If you have any questions, please type them in the chat box and they will be answered at the end.
- At the end of the webinar, please complete a short online evaluation (1min). Once submitted you will be given a link to a downloadable certificate. Please download the certificate, add your name and print it for your records.

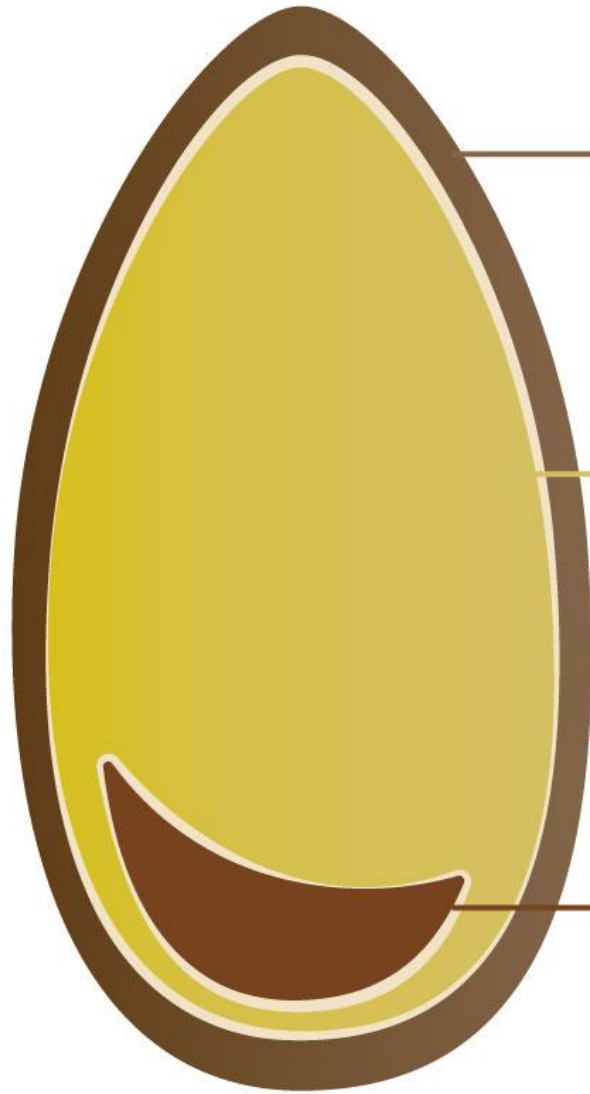


Understanding oats and their  
nutritional benefits – online evaluation

# Understanding oats and their nutritional benefits

04/06/2025

## Whole Grain



### Bran

Fiber-filled outer layer with  
b vitamins and minerals

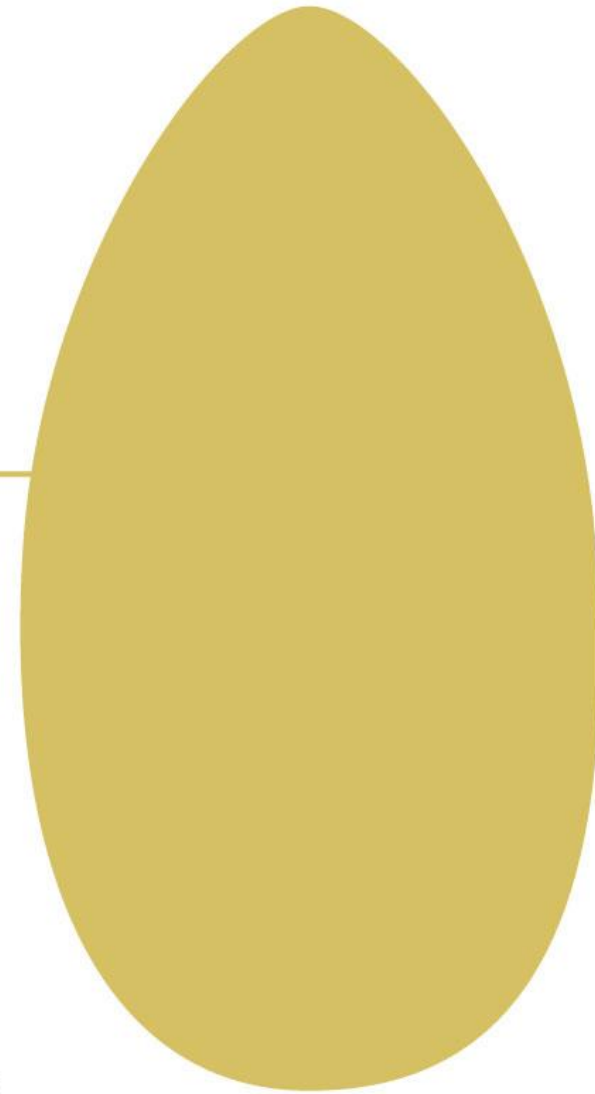
### Endosperm

Starchy carbohydrate middle  
layer with some proteins  
and vitamins

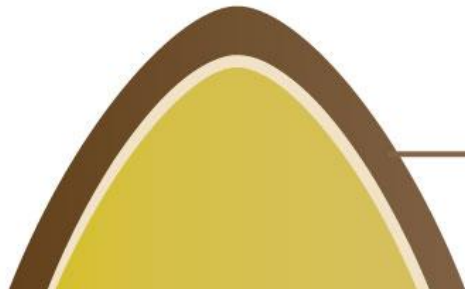
### Germ

Nutrient-packed core with  
B vitamins, vitamin E,  
phytochemicals and healthy fats

## Refined Grain



## Whole Grain



### Bran

Fiber-filled outer layer with  
B vitamins and minerals

## Refined Grain



‘the intact, ground, cracked or flaked or otherwise processed kernel after the removal of inedible parts such as the hull and husk; all anatomical components, including the endosperm, germ, and bran must be present in the same relative proportions as in the intake kernel’

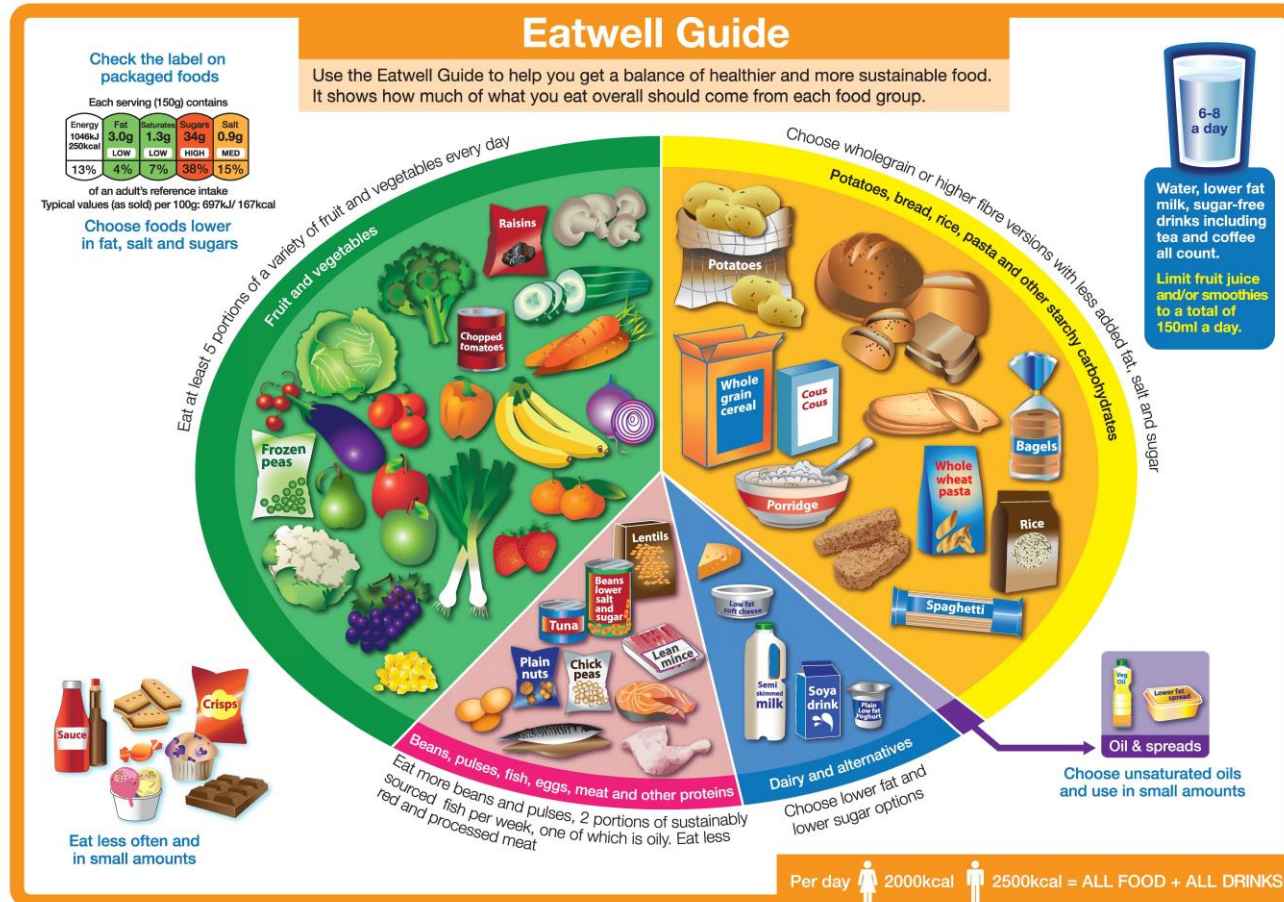


Nutrient-packed core with  
B vitamins, vitamin E,  
phytochemicals and healthy fats





# Wholegrains



Source: Public Health England in association with the Welsh Government, Food Standards Scotland and the Food Standards Agency in Northern Ireland

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WHEAT BERRIES



OATMEAL



QUINOA



BROWN RICE



BUCKWHEAT



FREEKEH



WILD RICE



AMARANTH



TRITICALE



KANIWA



SORGHUM



BULGUR



BLACK RICE



SPELT



# Dietary Recommendations



- 95% adults don't eat enough
- 1/3 don't eat wholegrains
- 19.7g fibre per day





# Oats





# Overview of Oats



# Nutritional Profile of Oats

Macronutrients	
Energy	392 kcal
Fat	8.1g
of which saturated	1.3g
Carbohydrates	64g
of which sugars	0.5g
Fibre	7.8g
Protein	12g
Salt	0g



# Nutritional Profile of Oats

Minerals		Vitamins	
Potassium	370mg (18.5%)	Vitamin E	0.59mg (5%)
Calcium	50mg (6%)	Vitamin B1	1.05mg (95%)
Phosphorus	390mg (56%)	Vitamin B3	3.5mg (22%)
Magnesium	110mg (30%)	Vitamin B5	0.75mg (12.5%)
Iron	3.6mg (26%)	Vitamin B6	0.34mg (24%)
Zinc	2.3mg (23%)	Biotin (B7)	19µg (38%)
Manganese	3.7mg (185%)	Folate (B9)	32µg (16%)

Normal energy-yielding metabolism, function of the nervous system, psychological function and function of the heart



# Beta-Glucans



4-6g/100g



2-20g/100g



0.5-2g/100g



## Beta-glucans from oats and barley

Consumption of beta-glucans from oats or barley as part of a meal contributes to the reduction of the blood glucose rise after that meal

*Health relationship:* reduction of post-prandial glycaemic responses

Authorised

## Oat beta-glucan

Oat beta-glucan has been shown to lower/reduce blood cholesterol. High cholesterol is a risk factor in the development of coronary heart disease

*Health relationship:* -/-

Authorised

## Beta-glucans

Beta-glucans contribute to the maintenance of normal blood cholesterol levels

*Health relationship:* maintenance of normal blood cholesterol concentrations

Authorised

## Oat grain fibre

Oat grain fibre contributes to an increase in faecal bulk

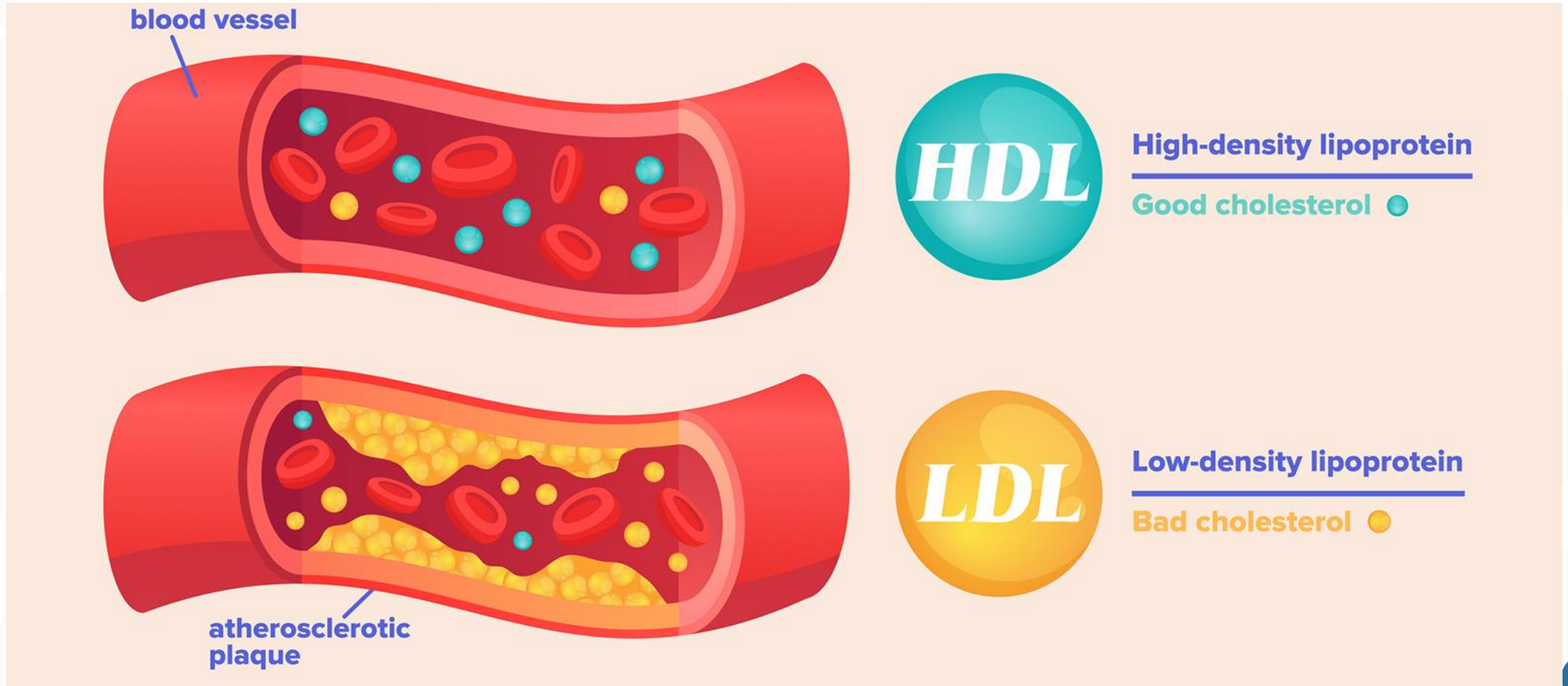
*Health relationship:* increase in faecal bulk

Authorised

# Health Benefits of Oats



# Cholesterol Reduction



# Cholesterol Reduction

## Cholesterol-lowering effects of oat $\beta$ -glucan

Rgia A Othman, Mohammed H Moghadasian, Peter Jh Jones ✉

*Nutrition Reviews*, Volume 69, Issue 6, 1 June 2011, Pages 299–309,

<https://doi.org/10.1111/j.1753-4887.2011.00401.x>

**Published:** 01 June 2011

## The effect of oat $\beta$ -glucan on LDL-cholesterol, non-HDL-cholesterol and apoB for CVD risk reduction: a systematic review and meta-analysis of randomised-controlled trials

Published online by Cambridge University Press: 11 October 2016

Hoang V. T. Ho, John L. Sievenpiper, Andreea Zurbau, Sonia Blanco Mejia, Elena Jovanovski, Fei Au-Yeung, Alexandra L. Jenkins and Vladimir Vuksan

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density lipoprotein

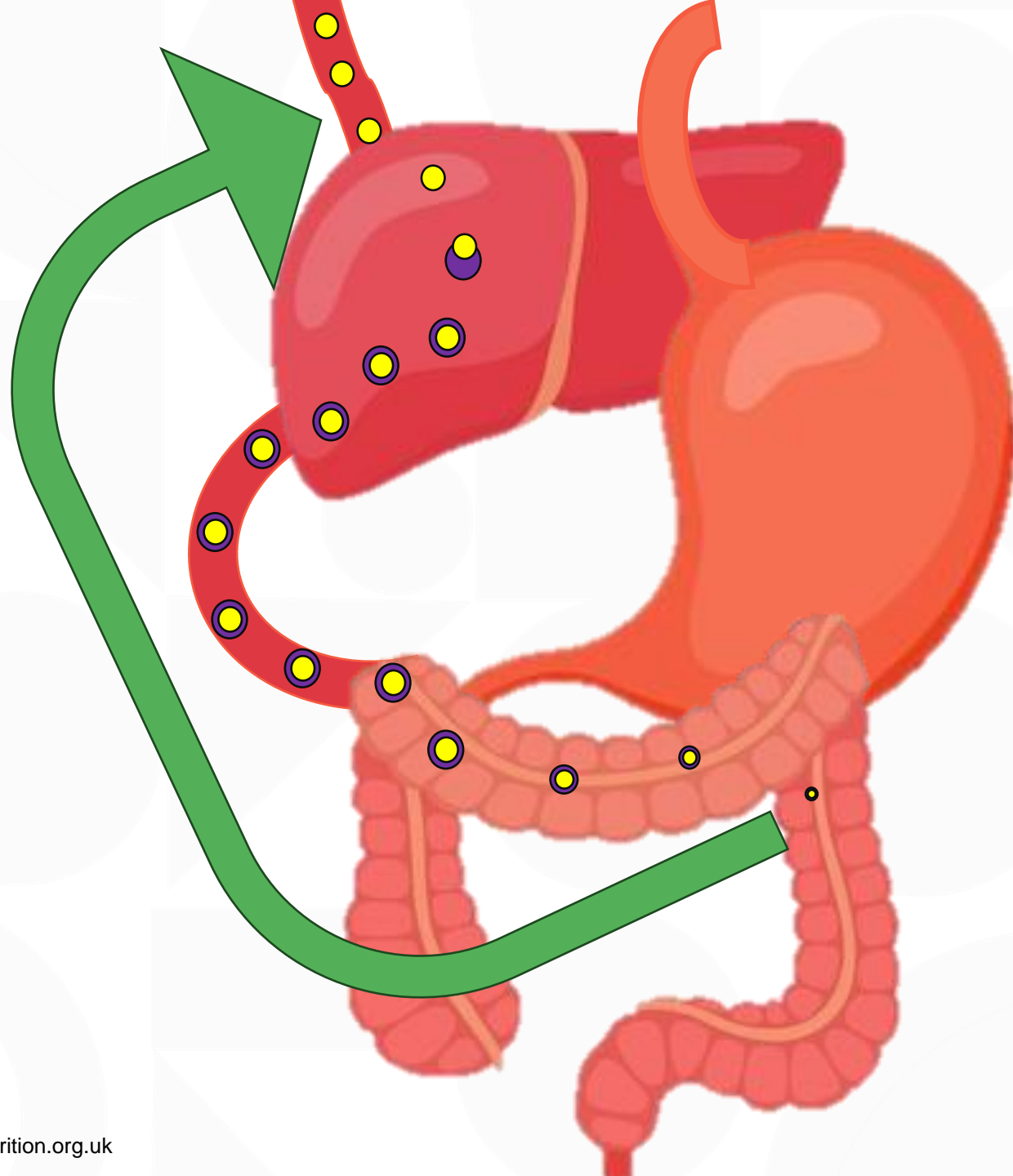
cholesterol ●

lipoprotein

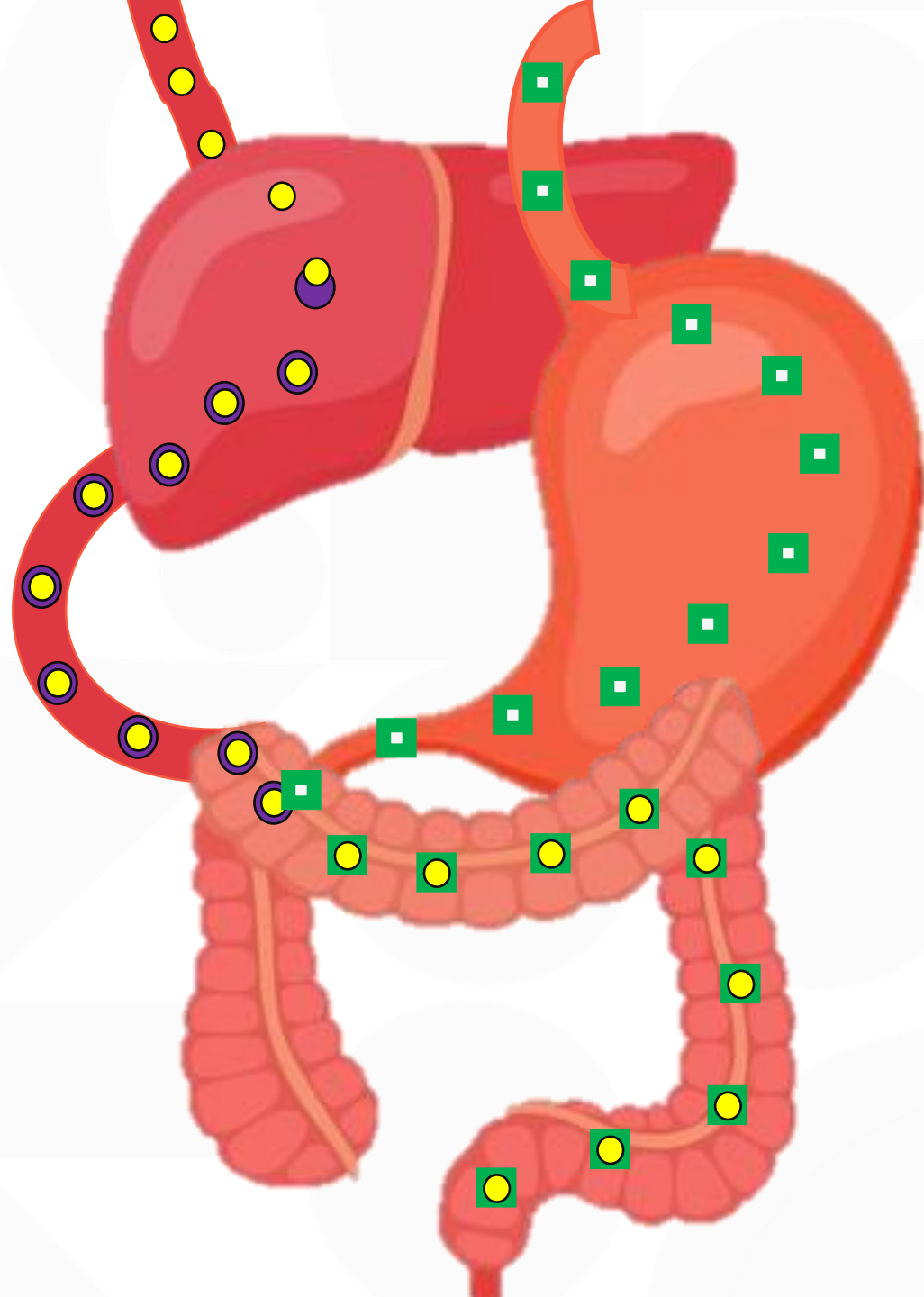
rol ●







- Cholesterol
- Bile acids



- Cholesterol
- Bile acids
- Beta-glucan

# Cholesterol Recap

- Forms a gel
- Gel traps bile acids
- Prevents reabsorption
- Excreted in stools
- Less reabsorption of bile acids
- Liver must use blood LDL cholesterol to make bile acids
- Lower LDL cholesterol levels
- Two authorised health claims



# Cholesterol Recap

## Oat beta-glucan

Oat beta-glucan has been shown to lower/reduce blood cholesterol. High cholesterol is a risk factor in the development of coronary heart disease

*Health relationship: -/-*

Authorised

## Beta-glucans

Beta-glucans contribute to the maintenance of normal blood cholesterol levels

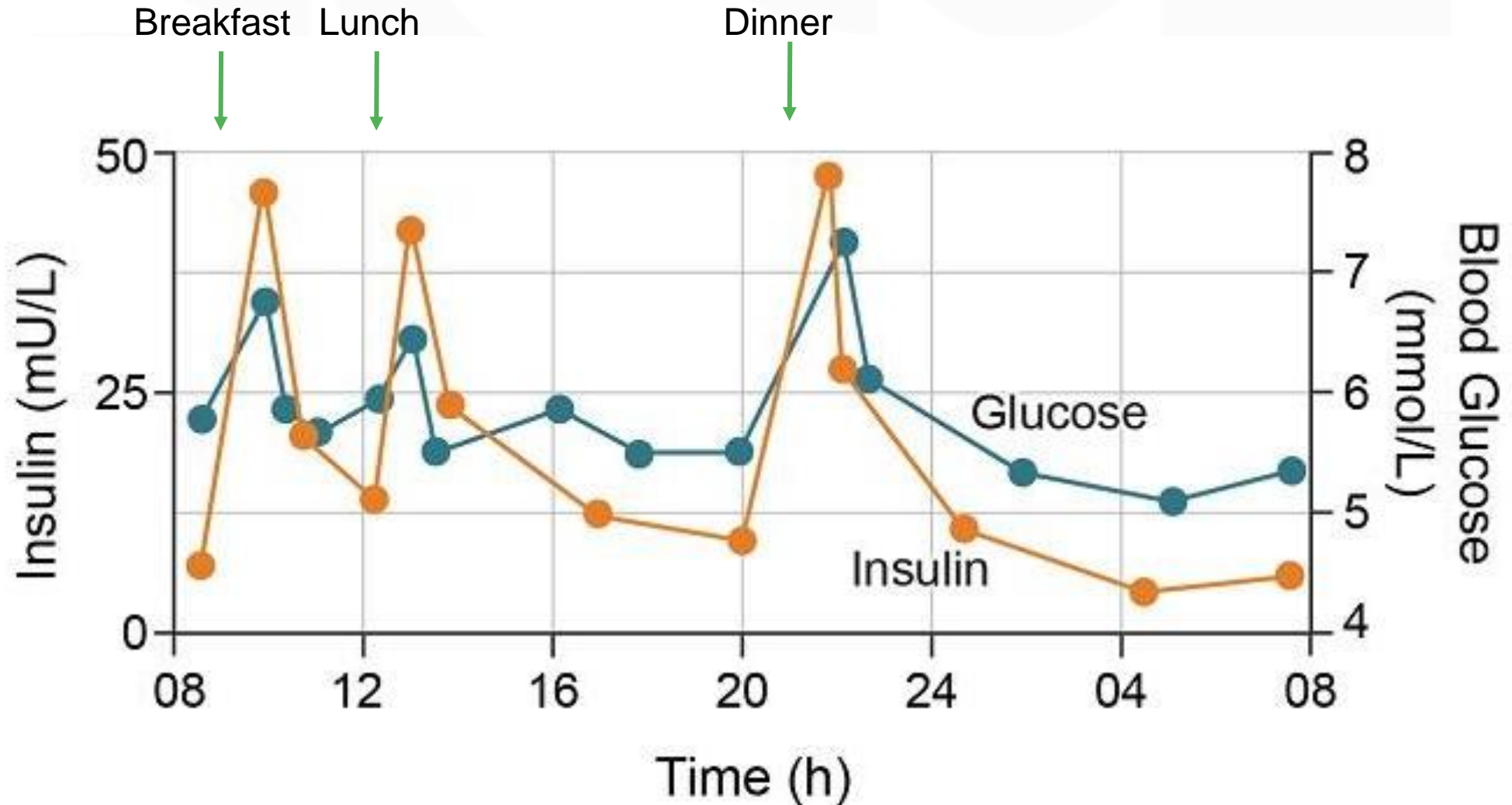
*Health relationship: maintenance of normal blood cholesterol concentrations*

Authorised

- Two authorised health claims



# Blood Sugar Control & Diabetes Management



# Blood Sugar Control & Diabetes Management

- Viscosity of beta-glucans slow and delays gastric emptying
- Impacts glucose absorption in small intestines
- Can help control blood glucose levels and improve insulin response



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## Beta-glucans from oats and barley

Consumption of beta-glucans from oats or barley as part of a meal contributes to the reduction of the blood glucose rise after that meal

*Health relationship:* reduction of post-prandial glycaemic responses

Authorised



# Blood Sugar Recap

- Beta-glucans can improve post-prandial (after eating) blood glucose and insulin responses
- Long-term consumption supports better glycaemic controls, improved insulin sensitivity and lowers type 2 diabetes risk
- 3-4g beta-glucans per day

## **Some considerations**

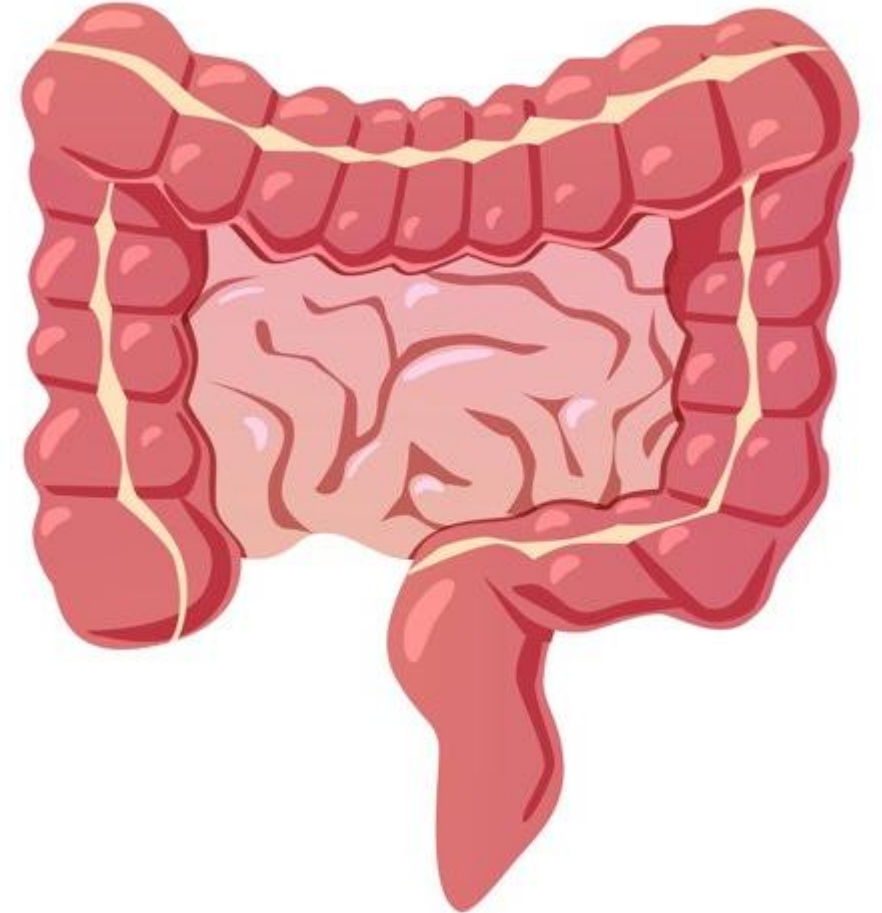
- Level of oat processing
- Watch out for added sugars
- 3-4g beta-glucans per day





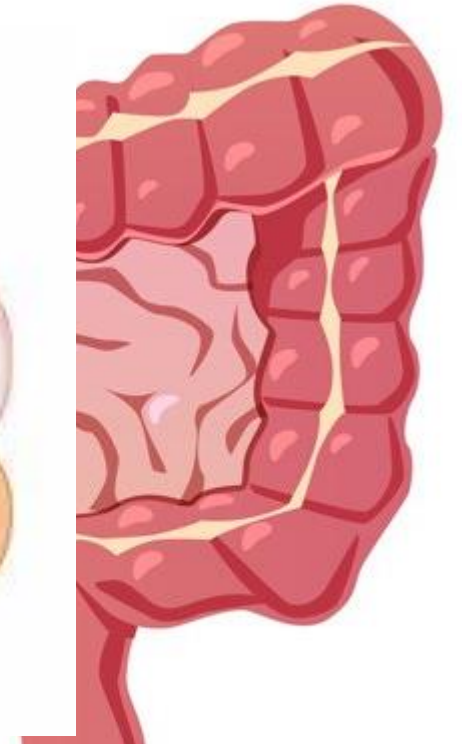
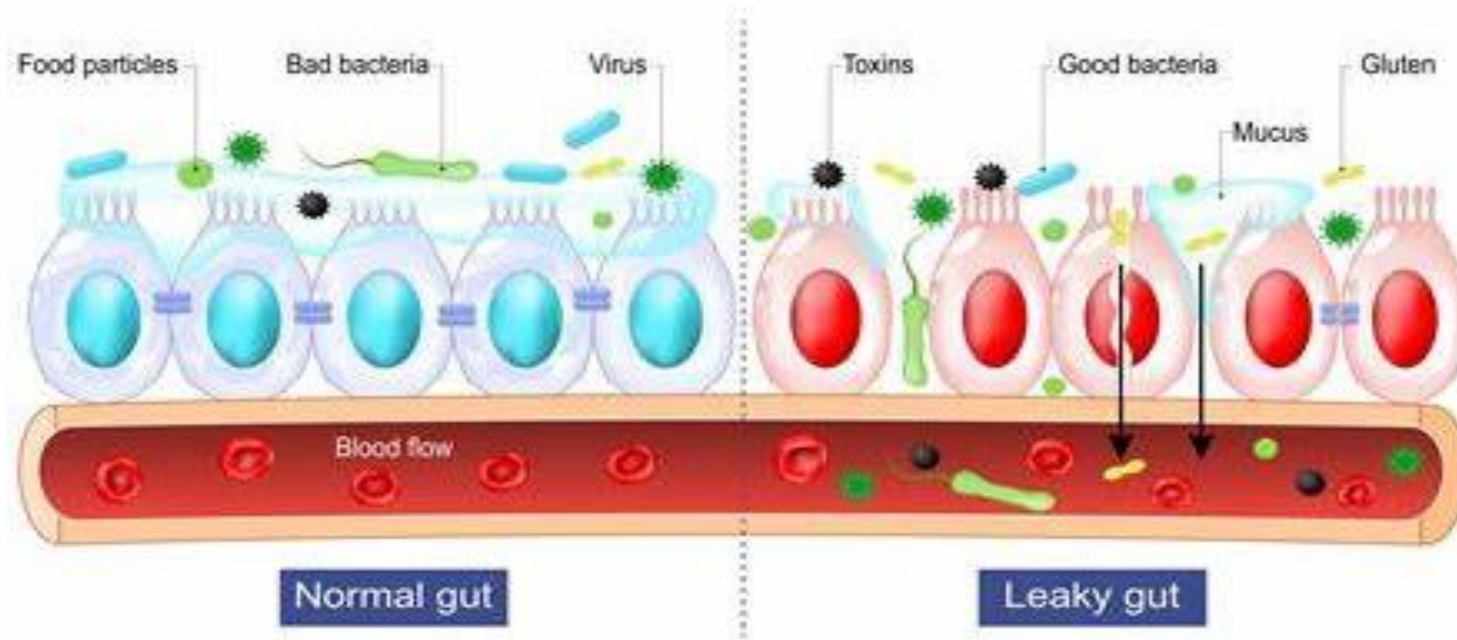
# Gut Health & Digestion

- Improved stool consistency and bowel regularity
- Supporting gut transit time
- Modulation of gut microbiota
- Immunomodulatory and anti-inflammatory effects
- Barrier function and mucosal health



# Gut Health & Digestion

- Improved si
- Supporting
- Modulation
- Immunomo



## Oat grain fibre

Oat grain fibre contributes to an increase in faecal bulk

*Health relationship:* increase in faecal bulk

Authorised



# Oat Misconceptions



“Oats spike  
your blood  
glucose  
levels”





# Oatzempic





# Summary

- Oats are a good source of dietary fibre
- Beta-glucans are a type of dietary fibre which form a viscous gel
- This can help with
  - Reducing and/or maintaining blood cholesterol
  - Slow gastric emptying to improve glycaemic control
  - Improve satiety
  - Improve digestive health
- 4 associated health claims
  - 2 around cholesterol
  - 1 on blood glucose
  - 1 on faecal bulk



# Recipe Ideas



# Recipe Idea Links

<https://www.foodafactoflife.org.uk/recipes/healthy-eating-week/awesome-overnight-oats/>

<https://www.foodafactoflife.org.uk/recipes/11-14-l2c/herby-veggie-crumble/>

<https://www.foodafactoflife.org.uk/recipes/11-14-l2c/fruity-flapjacks/>

<https://www.foodafactoflife.org.uk/recipes/cereals/apple-muffins/>

<https://www.foodafactoflife.org.uk/recipes/breakfast/breakfast-energy-bars/>

<https://www.foodafactoflife.org.uk/recipes/breakfast/oatmeal-loaf/>

<https://www.foodafactoflife.org.uk/recipes/breakfast/blueberry-and-oat-muffins/>

<https://www.foodafactoflife.org.uk/recipes/breakfast/pear-and-cinnamon-bircher-muesli/>

<https://www.foodafactoflife.org.uk/recipes/breakfast/chia-breakfast-pots/>

<https://www.foodafactoflife.org.uk/recipes/11-14-l2c/apple-and-sultana-crumble/>

<https://www.foodafactoflife.org.uk/recipes/breakfast/wholemeal-cottage-loaf/>





# What will be covered?



- The role of wholegrains in the diet
- Nutrition and health claims related to oats
- How oats can help with cholesterol levels
- Busting nutrition myths around oats
- Oats production, processing and trends
- Links to [\*Food – a fact of life\*](#)
- Suggestions for further reading and sources of information



Oats are grown on about  
**170,000**  
hectares of land  
in the UK

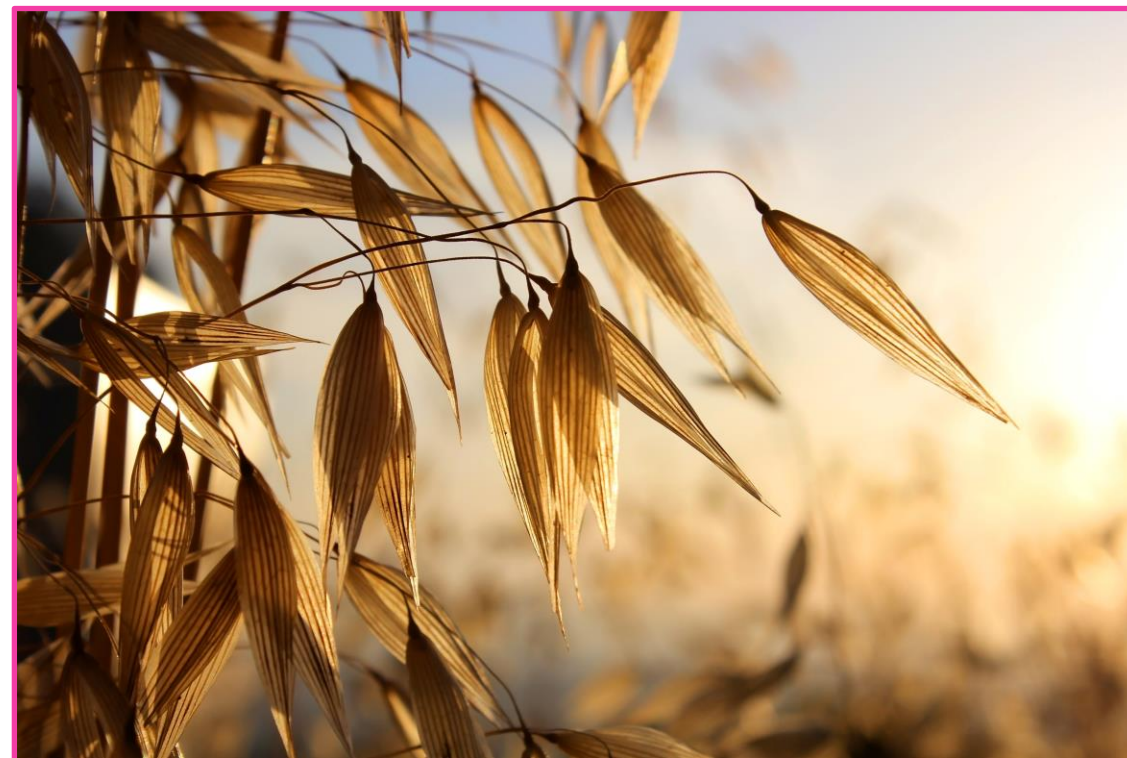
Oats are the third main  
crop grown in the UK  
and farmers produce  
on average around

**one million**  
**tonnes per year**



In the UK, oats are  
planted in September  
and harvested the  
following August

The harvesting  
process removes  
the grains from  
the plant





In the last full crop season (1 July 2023 to 30 June 2024), oat millers in the UK milled

**501,000 tonnes of oats**



The vast majority of which, **486,000 tonnes** were grown in the UK



just under **215,000 tonnes** of oat flakes & rolled oats

plus **79,000 tonnes** of oat flour & other cuts



# Oats: Production

Oats are milled, steamed, heated and cooled in a kiln, which brings out the flavour. The oats are then rolled, cut or ground to produce flakes, oatmeal or flour.

- Rolled oats - known as oat flakes.
- Oatmeal - the tough bran has been removed and light baked, this can be coarse, medium or fine.
- Pinhead oats - known as coarse oatmeal or steel cut oats.
- Oat flour - finer than oatmeal, this is made by grinding and sieving oats.



## Oats: Trends

According to Kantar's GB Grocery Consumer Panel, 35% of households purchased plant-based milk at least once in 2023, with nearly three quarters making multiple purchases.



**IN THE UK, OAT MILK HAS  
BECOME THE MOST POPULAR  
PLANT-BASED MILK**



**OF THE MARKET  
BY VOLUME**

**ANNUAL SALES HAVE SURPASSED  
£275 MILLION**

**WITH APPROXIMATELY  
500,000 LITRES  
SOLD DAILY  
TOTALING AROUND  
182 MILLION LITRES**



# Oat drinks: Fortification

- If people drink alternatives to dairy milk, such as oat milk, it is essential to check that it is fortified with nutrients, in particular iodine as this varies between brands.
- Iodine, is a nutrient of concern in the UK, particularly for teenage girls.
- Iodine helps to make thyroid hormones, and it helps the brain to function normally
- Low iodine intakes/status (not causing deficiency disease but below recommendations), is a concern in relation to pregnancy and cognitive development in children, leading to potential impact on cognitive abilities in children.



<https://www.bda.uk.com/resource/iodine-deficiency-in-the-uk-dietetic-implications.html>

## Oat trends: TikTok

**#Oats:** Over 133 million posts

**#BakedOatsRecipes:** Over 110 million posts

**#OvernightOatsRecipe:** Over 177 million posts

**#OvernightOatRecipes:** Over 193 million posts

**#OatMeal:** Over 133 million posts


**#OatmealRecipesOnRestaurants:** Over 100 million posts











# Food – a fact of life resources

- Oat farming and processing presentation – [11-14 years](#) and [14-16 years](#)
- Farming food for you poster – [cereals](#)
- [Knowledge organisers](#)
- [The grain chain game](#)
- [Recipes](#)



## Here's the grains

	Wheat	Oats	Barley
The grain			
The plant			
Name	Wheat	Oats	Barley

## Farming food for you Cereals

**The cereal farm and farmer**

Wheat, barley and oats are planted in the winter and spring.

Just over half of land in the UK is used to grow cereals.

Cereals are important crops in the UK, as they are used to make everyday food, such as bread and breakfast cereals, as well as to feed animals and make fuel.

Some farms are specialised and only grow cereals, mixed with other crops, while others keep cows, pigs and sheep.

Farmers grow strips of wild flowers to encourage bees or crops for birds to eat over the winter.

Farmers often use technology to help them grow their crops, such as automatic tractors, aerial mapping of fields and use of drones.

**Planting and growing**

Wheat, barley and oats are planted in the winter and spring.

Farmers use a range of farming methods, choosing sowing and rotating crops to reduce disease. They also look after the health of the soil.

**Harvesting**

The main cereal harvest takes place in late summer to early autumn. Combine harvesters separate the grain from the stalks. Some can harvest over 500 tonnes an hour.

After harvest, the grains are stored carefully to keep them safe.

The grain is stored on the farm or at grain storage silos for a group of farms, until it is needed by the mill to make into flour or by animals as feed.

Cereals include grains, such as wheat, barley and oats. Wheat is the most commonly grown cereal crop in the UK, with 11–16 million tonnes grown each year. Around 6.6–8.3 million tonnes of barley and 0.8–1.1 million tonnes of oats are harvested each year.

**Uses**

Oats are used for animal feed, breakfast cereals and biscuits.

**Porridge oats**

**Oat & Bran bar**

Barley is used for animal feed, beer and whisky production and can be used in a range of dishes.

After wheat is milled into flour, 80% goes to bakeries to make bread, 10% for biscuits, 4% for bags of flour and 3% for cakes. 80% of wheat milled in the UK is home grown.

**Wholemeal bread**

**Biscuits**

**FOOD a fact of life**

foodafactoflife.org.uk

Produced for you by AHDB

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Name: \_\_\_\_\_
Date: \_\_\_\_\_

### Food commodities: Cereals and rice

- Food is sourced, processed and sold in different ways.
- Food production and processing ensures that food is edible and safe.

**What are cereals?**

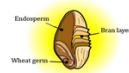
- Wheat, barley and oats are all types of cereals grown in the UK.
- Grains grow at the top of the plant, closely packed together called "seeds".
- Each ear of wheat is made up of 45-50 grains. It is these starchy grains that we eat.

There are three parts to wheat grains:

1. **Grain** – the coarse outer layer.
2. **Wheat germ** – a new plant would grow from this part.
3. **Endosperm** – the starchy store of food which the germ feeds on while it grows.

The white flour we use to make many products comes from the endosperm.

**Endosperm**



**Wheat germ**

**Primary processing**

**Milling**

- The grain from the cereals is used to make flour and milling is the process that turns wheat and oats into flour.
- The harvested grain is delivered to the mill where it is cleaned and conditioned.
- The grain is then passed through rollers and sieves to open and separate the different parts of the grain. Grains like oats are rolled and cut to produce flakes and oatmeal.

**Milling**

To make malt, cleaned barley, water, air and heat are needed. The main stages to making barley are:

1. **sweeping** – soaking the grains in water;
2. **germination** – allowing the grains to grow;
3. **drying** – drying the grains.

**Types of flour**

- **Wheat** – usually contains 75% of the grain and most of the bran and wheatgerm are removed.
- **Brown** – usually contains about 95% of the original grain and some of the bran and wheatgerm are removed.
- **Wholemeal** – made from the whole wheat grain.
- **Malted wheatgrain** – brown or wholemeal flour with malted grains added after milling.
- **Wholemeal** – white or brown flour with at least 10% made up of wheatgerm added during milling.
- **Strong** – contains a higher gluten content to make a range of different breads, pizzas and crumpets.
- **Plain** – contains a lower gluten content and used to make biccies, pasty, scones, porridge, batters and Yorkshire puddings.
- **Self-raising** – baking powder is added as part of the milling process and mainly used to make cakes and scones.

**Growing wheat, barley and oats**

- Wheat is grown worldwide, different varieties are grown depending on the climate and geography of the country. In the UK 11-16 million tonnes are grown per year. It is planted in early autumn and harvested the following summer.
- About half the crop of wheat is made into food for human consumption, and some is used for animal feed (e.g. to feed chickens, cattle and pigs). About 2% of the crop is used as seed plant for the following year.
- Other crops grown in the UK include barley with 6.6 million tonnes harvested and oats about 1 million tonnes.

**Secondary processing**

**Flour into bread**

The four basic ingredients to make bread are:

1. flour;
2. yeast (make the bread rise);
3. salt (adds taste and aids proving);
4. warm water.

Fat can sometimes be added to make the loaf lighter and extend the shelf life.

**Malted ingredients**

Malt is used in a wide variety of food and drinks to add flavour, colour, aroma, and texture. It can help extend the shelf life of foods (from cookies and cakes to drinks and baby foods).

**What is rice?**


Rice is a short living plant that requires a substantial amount of water when growing. When farming rice, the fields are flooded and drained before harvest. The rice, once harvested, is known as a paddy grain. The paddy grains are sent to a mill to be threshed and turned into grains of rice for cooking.

Rice varieties can be divided into 3 groups:

- **long grain** – all purpose and can be used as an accompaniment e.g. basmati;
- **medium grain** – used in risottos and puddings as it is creamy when cooked e.g. Arborio;
- **short grain** – used to make sushi and puddings as it tends to be stickier when cooked e.g. bomba.

**Bread in the UK**

All white bread commercially sold in the UK is made with white flour fortified with calcium, iron and B vitamins. It is a legal requirement to fortify flour in the UK.



**Tasks**

1. Create a display showing the stages for making barley.
2. Research five different types of bread from around the world that are baked and eaten for different occasions.

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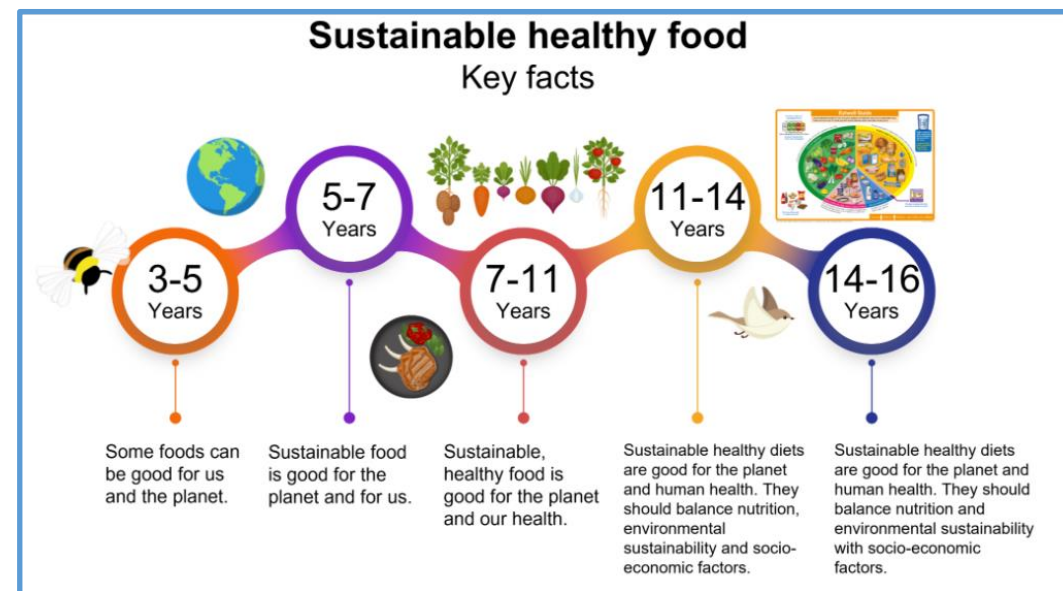
This resource meets the [Guidelines for producers and users of school education resources about food](#)

www.foodafactoflife.org.uk



# Sustainable healthy food resources

- A comprehensive presentation for pupils covering the main factors that make up a sustainable healthy diet.
- A variety of different pupil activities which support different learning styles, encourage independent learning and are suitable for individual, class or group work. These include pick and mix activities, role plays, research tasks and worksheets to check recall and understanding.

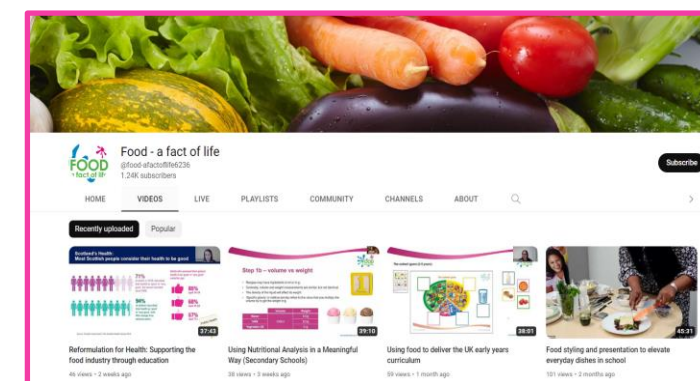


# More training...

**FREE** online modular courses:

- Functional properties of food
- Sensory science
- Food spoilage, hygiene and safety
- Characteristics of teaching food and nutrition education- primary, secondary and pupils with additional needs

More online and in-person training coming soon!



[FFL webinar recordings](#)

To find out more and to book, go to  
<https://www.foodafactoflife.org.uk/training/>

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Sign up on the homepage: [www.foodafactoflife.org.uk](http://www.foodafactoflife.org.uk)

## PPD newsletter (find out about upcoming FFL training)

<https://www.foodafactoflife.org.uk/professional-development/>

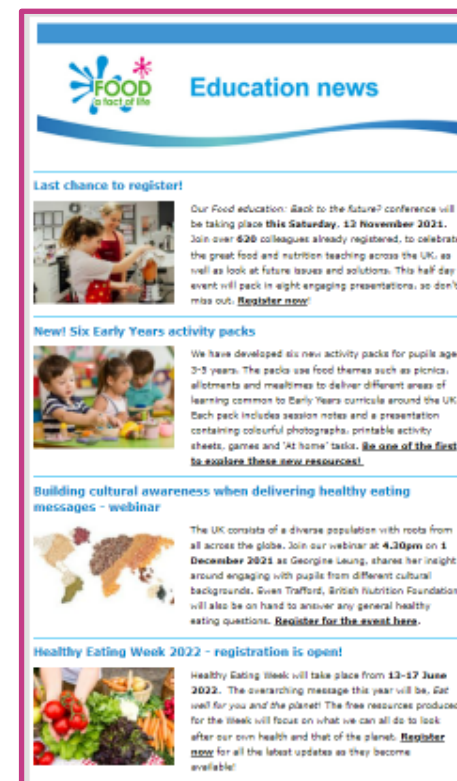
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# Understanding oats and their nutritional benefits



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[education@nutrition.org.uk](mailto:education@nutrition.org.uk)