

MAY 2021

DAIRY

PART OF A HEALTHY AND BALANCED DIET



**History and
production
process**

**Nutrients
and dietary
guidelines**

**FAQ: Dairy
nutrition
and health**

**Does dairy fit
in a sustainable
diet?**





DAIRY

Dairy is part of a healthy and varied diet around the world. Milk is the basis of all dairy products. It is a natural source of essential nutrients like protein, calcium, potassium, phosphorus, iodine, and vitamins B2 and B12.



HISTORY

the rise of DAIRY farming

The agricultural society and dairy farming develops in the Middle East.

8,400 years ago

The agricultural society and dairy farming reaches the Balkan

7,500 years ago

Well developed dairy economy in Europe.

10,000 - 11,000 years ago

The agricultural society spreads to Greece.

8,000 years ago

People developed the ability to digest lactose during adulthood.

6,500 years ago

AROUND 10,000 YEARS AGO

the transition from a nomadic to an agricultural society spread from the Middle East through Greece and the Balkans to Central Europe.

OUR ANCESTORS

discovered that there are products that are edible, nutritious and also tasty.



MILK

from some animals was discovered to be a valuable source of nutrients.¹



ONLY CHILDREN

were initially given milk as adults had problems **digesting milk sugar**, which is also known as lactose.

GENETIC ADAPTATION

allowed some adults to keep the **ability to digest lactose** and to drink milk.



5 TO 10% OF THE POPULATION

survived to reproductive age because of this genetic adaption², so a **real evolutionary benefit**.



THROUGH CENTURIES

the amount of people who were able to **digest lactose in adulthood** has grown to over **one third of the world's population**.³



CENTRAL AND NORTHERN EUROPE

experienced a substantial **growth in dairy farming** and over **90% of the population can digest lactose**.^{1,4}



YOGHURT

has been eaten for many centuries and is assumed to originate from Central Asia. Milk was kept in leather bags or wooden barrels. With the **presence of bacteria and a high temperature**, the milk started to ferment, resulting in yoghurt.

CHEESE

is a **result of milk kept in containers made of calves' stomachs and the presence of rennet** (a complex of digestive enzymes) acted as coagulant to **give milk a more solid, cheese-like structure**.

YOGHURT AND CHEESE

allows milk to be kept for a longer period of time.^{1,5}





HOW DAIRY PRODUCTS are made

Various dairy products can be made from milk, such as yoghurt and cheese.
Each product has its own characteristic taste and unique properties.

YOGHURT

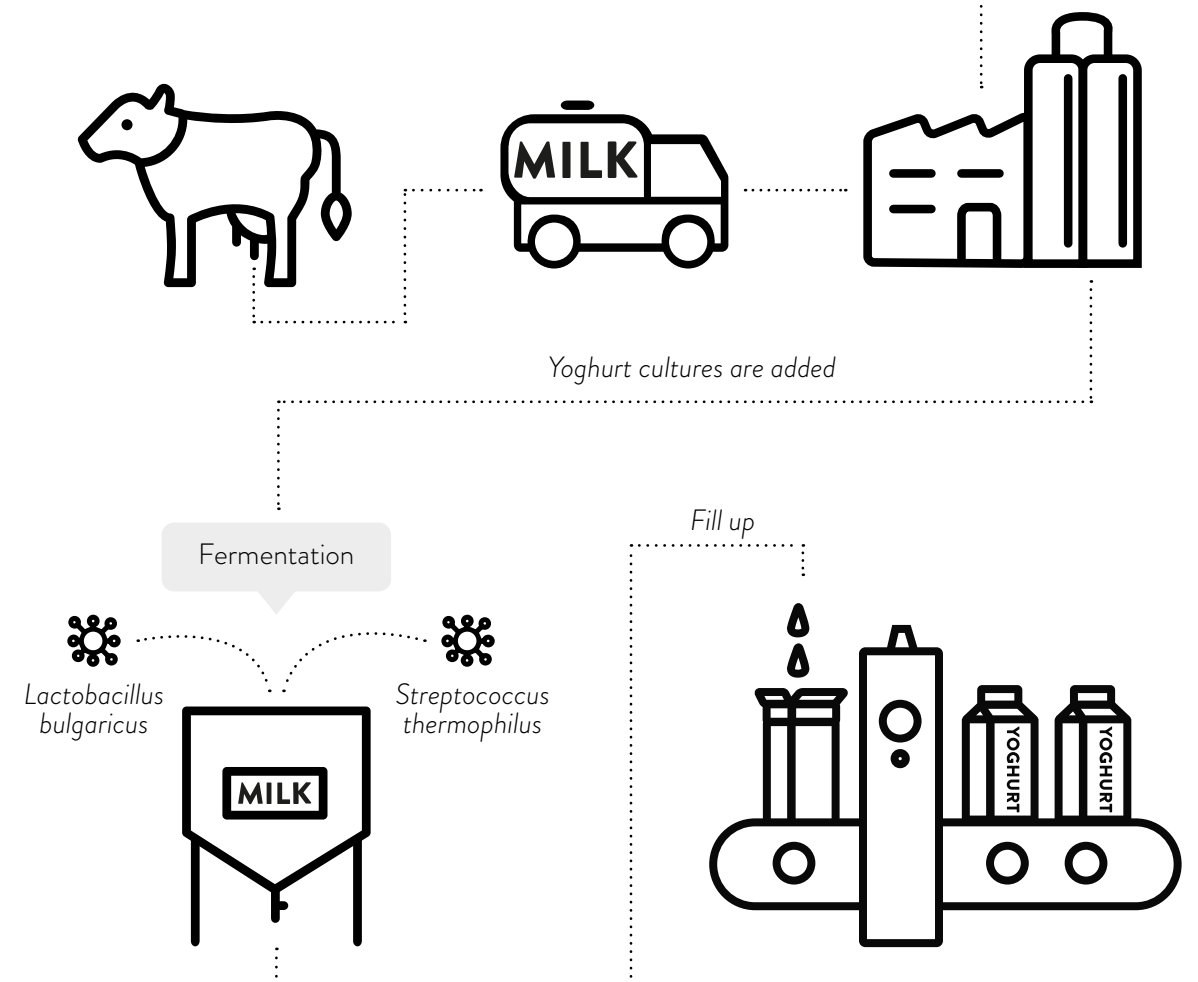
Yoghurt is made by adding a mixture of lactic acid bacteria to the milk known as the yoghurt cultures. The most commonly used lactic acid bacteria are *Lactobacillus bulgaricus* and *Streptococcus thermophilus*.

By doing so, the milk starts to ferment. During the fermentation process, a proportion of lactose naturally present in milk is converted to lactic acid.

The characteristics of yoghurt depend on the composition of the milk, the yoghurt culture type, and the temperature and duration of the fermentation process. Fermented dairy products will keep for a longer duration than non-fermented dairy products because the acid in fermented dairy products inhibits the growth of bacteria that can cause decomposition.

How YOGHURT is made

The milk is standardised in the plant (the fat content is determined), homogenised (the fat globules are equally divided) and pasteurised (heated for a short time at 72°C).



The characteristics of the yoghurt depends on the composition of the milk, the yoghurt culture type and the temperature and duration of the fermentation process.

8-15 hours 30-40 °C



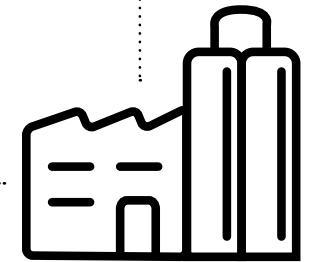
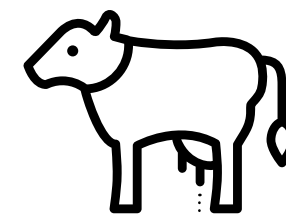


DUTCH-TYPE CHEESE

The traditional cheese-making process has been passed on from generation to generation for centuries. Dutch-type cheese is normally made from pasteurized fresh milk. A starter culture and coagulant are added to the milk. This causes the proteins to coagulate, forming a solid substance (curd) and a remaining liquid (whey). The curd is then pressed to squeeze out even more liquid. Finally, the cheese is soaked in a brine bath. This gives the cheese its taste and improves the shape and texture. It also lengthens the shelf life of the cheese. The cheese is then left to mature for a period ranging from four weeks to over a year. Both the maturation period and type of bacteria impacts the taste of the cheese. Due to its preparation process and maturing period, Dutch-type cheese contains hardly any lactose.

Did you know? You may see numbers like 30+ and 48+ on cheese. These numbers refer to the fat content of the cheese based on the percentage of dry matter.

How CHEESE is made



The milk is thermised (lightly heated) and standardised (the fat content is determined).

Pasteurisation



Add coagulant & starter culture

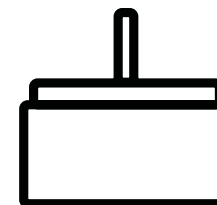


Curdling



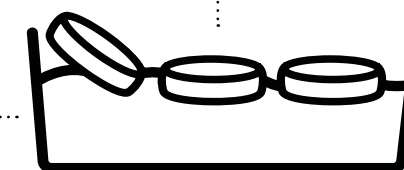
Whey drains through the curd and can be used for making sports nutrition and infant formulas.

Press the curd

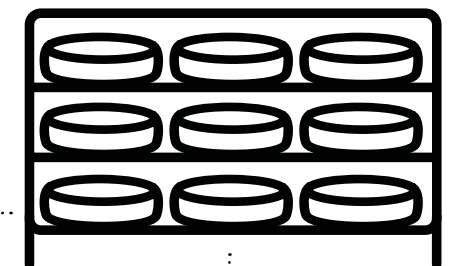


Cheese is pressed in a vat. The vat determines the shape of the cheese.

Brine bath



Ripening



Ripening 4 weeks to > 1 year. The process of cheese ripening affects the taste of the final product.

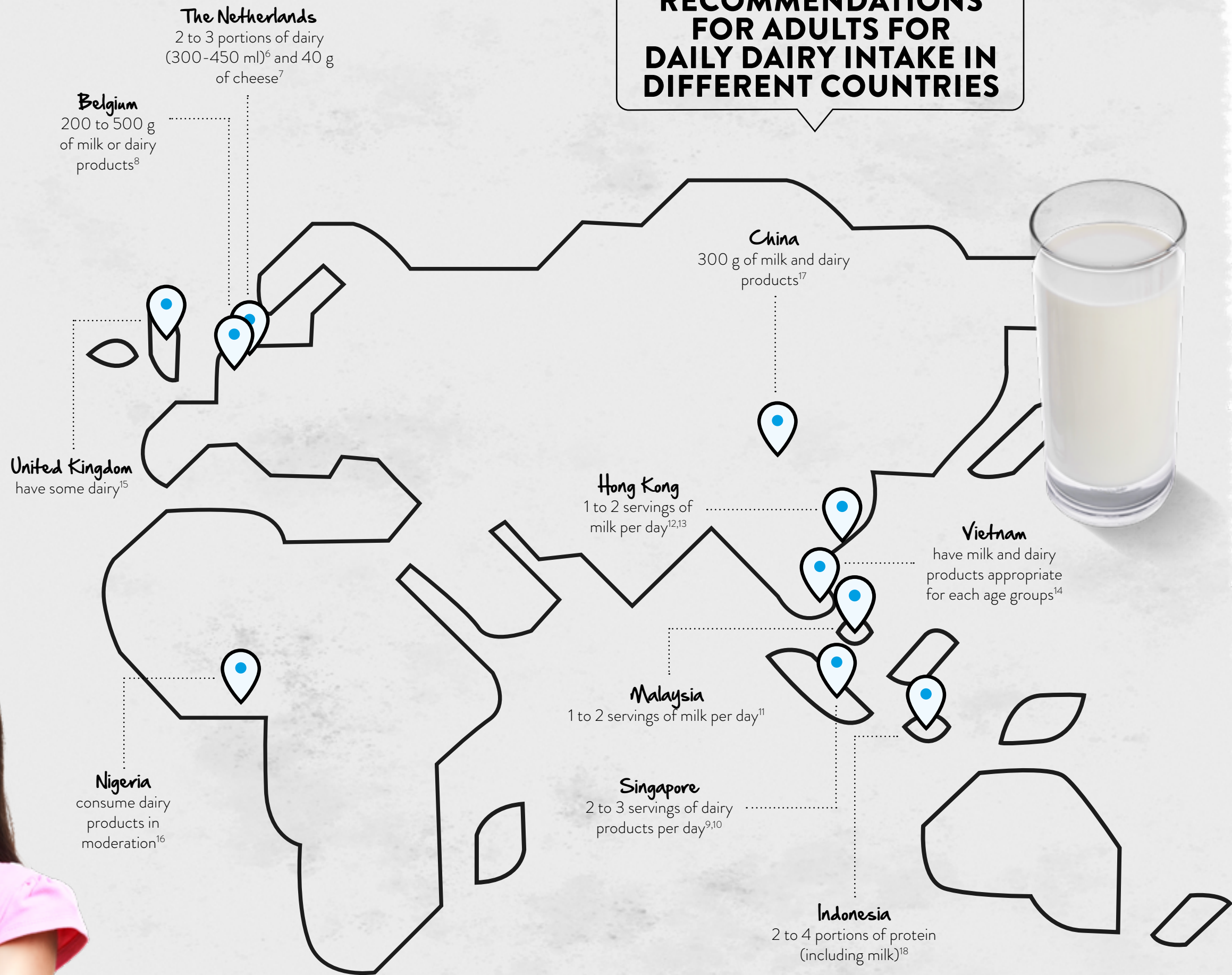
A PLACE FOR DAIRY IN DIETARY guidelines worldwide

Globally, dairy is recommended in dietary guidelines because of its contribution to the intake of nutrients. Different dairy products are recommended in accordance with the local culture and eating habits.

A varied and balanced diet is a prerequisite for good health. As a natural source of nutrients, milk and dairy products contribute to a healthy diet throughout all stages of life.



RECOMMENDATIONS FOR ADULTS FOR DAILY DAIRY INTAKE IN DIFFERENT COUNTRIES





NUTRIENTS NATURALLY found in dairy¹⁹⁻²⁶

Milk naturally contains essential nutrients, such as protein, calcium, potassium, phosphorus, iodine, and vitamins B2 and B12. Yoghurt and cheese are made from milk and contain many of the nutrients found in milk.

Riboflavin (vitamin B2)

Supports the normal functioning of the nervous system and energy-metabolism. Riboflavin also contributes to the maintenance of skin, vision and normal metabolism of iron.

Vitamin B12

Supports the normal functioning of the nervous system and contributes to energy metabolism. Vitamin B12 also contributes to the normal functioning of the immune system and to the normal formation of red blood cells. Vitamin B12 is only found in animal products such as dairy, meat, fish and eggs.

Calcium

Contributes to the maintenance of bones and teeth, and to the functioning of muscles. Calcium also supports normal neurotransmission, blood clotting and functioning of the digestive enzymes.

Phosphorus

Contributes to the maintenance of bones and teeth. 85% of the total amount of phosphorus in the body is stored in the bones. Phosphorus also supports normal energy metabolism.

Potassium

Contributes to the normal functioning of the muscles and the nervous system. Potassium also plays a role in maintaining a normal blood pressure.

Iodine

Contributes to the production of thyroid hormones and normal thyroid function. Iodine also plays a role in the functioning of the nervous system and energy metabolism.

Protein

Protein contributes to the growth and maintenance of bones and muscle mass.



NUTRITIONAL VALUE OF DAIRY PRODUCTS

The nutritional composition of milk varies globally, and depends on the season and the feed used for the cows. The tables show the average nutritional values of milk, yoghurt and cheese in the Netherlands. The values can differ per country.

Semi-skimmed milk²⁷

	Semi-skimmed milk ²⁷ 100 ml
Energy	190 kJ / 45 kcal
Fat	1.4 g
Carbohydrates	4.7 g
Protein	3.4 g
Vitamins and minerals	
Calcium	123 mg
Phosphorus	104 mg
Potassium	160 mg
Iodine	14.9 mcg
Vitamin B2	0.18 mg
Vitamin B12	0.45 mcg

Semi-skimmed yoghurt²⁷

	Semi-skimmed yoghurt ²⁷ 100 g
Energy	212 kJ / 50 kcal
Fat	1.5 g
Carbohydrates	4.3 g
Protein	4.2 g
Vitamins and minerals	
Calcium	139 mg
Phosphorus	88 mg
Potassium	142 mg
Iodine	14.9 mcg
Vitamin B2	0.2 mg
Vitamin B12	0.39 mcg

Dutch-type cheese²⁷

	Cheese ²⁷ (Gouda full-fat) 100 g
Energy	1529 kJ / 369 kcal
Fat	30.5 g
Carbohydrates	0.0 g
Protein	22.9 g
Vitamins and minerals	
Calcium	816 mg
Phosphorus	539 mg
Selenium	12 mcg
Zinc	3.46 mg
Vitamin A	319 mcg
Vitamin B2	0.28 mg
Vitamin B12	2.01 mcg
Vitamin K	67.6 mcg

AS CHEESE IS concentrated milk

100 g of cheese contains more nutrients than 100 ml of milk.



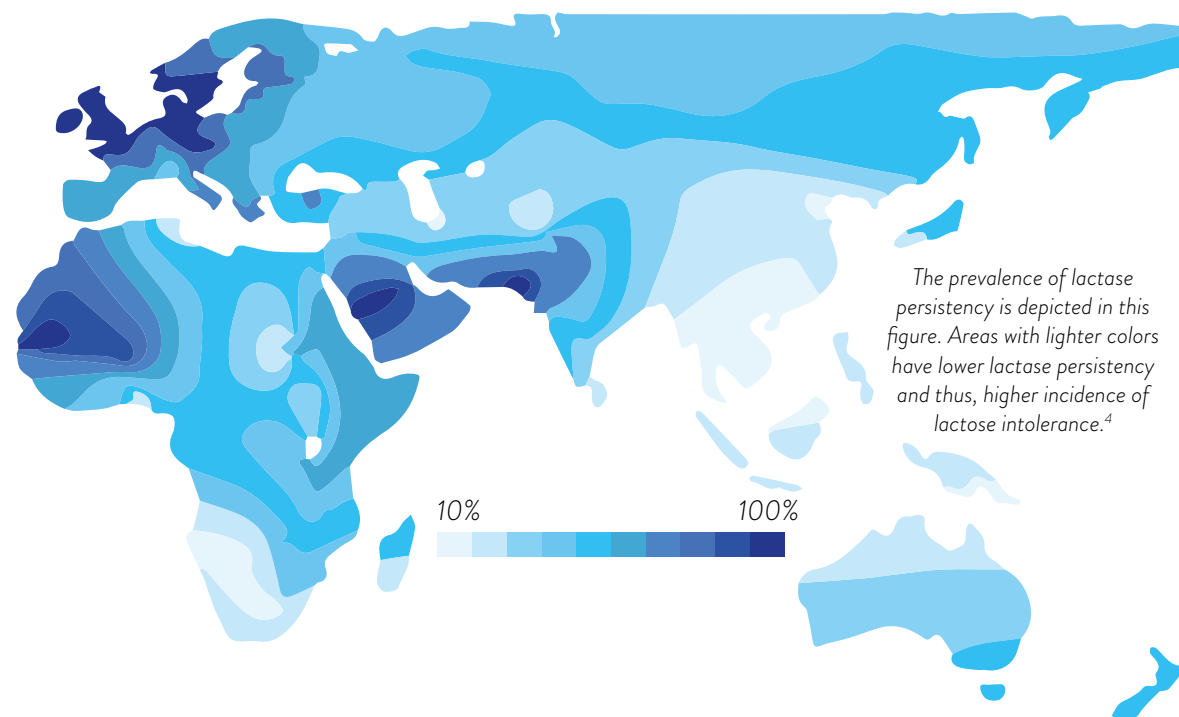
FREQUENTLY ASKED QUESTIONS:

Dairy nutrition and health

CAN PEOPLE WITH LACTOSE INTOLERANCE CONSUME DAIRY PRODUCTS?

Generally, it is not necessary to eliminate lactose completely from the diet.²⁸ Small amounts of lactose usually do not cause discomfort and are harmless. Most people with diagnosed lactose intolerance can digest about 12 g of lactose per day (about 250 ml of milk) with little to no symptoms.^{29,30}

As lactose is partially converted by lactic acid bacteria, fermented dairy products such as yoghurt contain less lactose compared with milk. Semi-hard cheeses, such as Dutch-type cheese and cheddar, hardly contain any lactose after 6 weeks of ripening time.



DO CHILDREN OUTGROW COW'S MILK PROTEIN ALLERGY?

Around 5 to 15 % of children show symptoms suggestive of cow's milk protein allergy (CMPA) and approximately 2 to 3 % of infants and toddlers are diagnosed

with it.³¹ The duration of the allergy to the cow's milk protein varies, but most children outgrow this allergy by the age of 2 to 4 years.^{32,33}

DOES DRINKING MILK HAVE ANY EFFECT ON BONE HEALTH?

Genetics are a major determinant for strong bones and account for 60 to 80 % of the variation in peak bone mass.³⁴ Nutrition and exercise also play important roles in the development of the bones while growing, and in the bone tissue maintenance phase

for adults and the elderly. Health authorities agree that calcium, protein and phosphorus from dietary sources such as milk, support the development and maintenance of bones.^{19,20,22,23,25,35}

WHY DO ADULTS NEED CALCIUM?

Calcium is the most common mineral in our bodies. We need sufficient amounts of calcium in every phase of life. It contributes to the maintenance of bones, normal blood clotting and proper functioning of muscles and nerves.^{19,22,23} Dairy products naturally contain calcium. Legumes, vegetables and nuts contain calcium as well, but in smaller amounts. In a varied diet, dairy is a major contributor

to calcium intake. A glass of milk (200 ml) naturally contains around 240 mg of calcium,²⁷ which is 30 % of the recommended daily intake for calcium (800 mg).³⁶ A diet containing sufficient calcium can be composed without dairy, but this is not easy. A large portion (200 g) of boiled broccoli contains about 70 mg calcium. Pak choi (200 g) provides about 190 mg calcium.²⁷

DOES DAIRY HAVE AN EFFECT ON CARDIOVASCULAR HEALTH?

Dietary guidelines often recommend opting for low-fat dairy products. The reason for the recommendation is because two-thirds of milk fat is saturated fat. Replacing saturated fat in the diet with unsaturated fat is advised for a healthy cholesterol level and to maintain a healthy heart and blood vessels. Milk, however, consists of more than just

saturated fat. Newer evidence indicates that regular intake of milk and dairy products has a neutral or beneficial effect on cardiovascular health.³⁷⁻⁴¹ Thus, the relationship between dairy products and cardiovascular health is more complex than previously thought.

DOES MILK HAVE AN EFFECT ON BODY WEIGHT?

Physical activity and a healthy, varied diet are important factors when it comes to maintaining a healthy weight. Consuming more energy than will be expended leads to weight gain, regardless of food type. Some people have the false impression that milk and dairy products are fattening. Scientific evidence does not support this. Research shows that consumption of dairy as part of a varied diet is associated with a healthy body weight for children and adolescents.⁴²⁻⁴⁹



DOES DRINKING MILK STIMULATE THE PRODUCTION OF MUCUS IN THE MOUTH?



Increased mucus production after drinking milk is not scientifically proven. Some people find the sensation in the mouth after drinking milk unpleasant, because milk briefly coats the interior of the mouth and throat. This milky coating only lasts for a very short time and it is not the same as mucus production.⁵⁰⁻⁵³

ARE PLANT-BASED DRINKS A HEALTHY ALTERNATIVE TO COW'S MILK?

Cow's milk is a natural product that contains protein and other nutrients, such as calcium, phosphorous, iodine and vitamins B2 and B12. The nutritional composition of plant-based drinks varies, especially in protein level. They also do not naturally contain vitamins and minerals, but might be fortified. For instance, almond and oat drinks have hardly any protein. Soy drink contains almost the same amount of protein as milk does. Among all plant-based drinks, fortified soy drink's nutritional value is the most comparable to milk.⁵⁴



DOES DAIRY FIT IN A SUSTAINABLE DIET?

As a nutrient dense food product, milk and dairy products fit in well with a sustainable and healthy diet.

There is increasing demand for good nutrition that provides an optimal amount of nutrients and has a low impact on the environment. Feeding the growing population in a responsible way requires sustainable and healthy nutrition. According to the Food and Agriculture Organization (FAO), sustainable and healthy diets are dietary patterns that⁵⁵:

- promote all dimensions of individuals' health and wellbeing;
- have low environmental pressure and impact;
- are accessible, affordable, safe and equitable; and
- are culturally acceptable.

Numerous European sustainable diets models show a daily diet with adequate nutrients and a reduced to relatively low environmental impact, consists of⁵⁶⁻⁵⁸:

- increased plant-based food such as whole grains, legumes, fruits, and vegetables;
- limited amount of meat; and
- maintained amount of dairy (200 to 500 g).

In these advises, greenhouse gas emission decreased by 20 to 25 %.⁵⁶⁻⁵⁸

When dairy is removed from a diet, the nutrients contributed by dairy need to be provided by other foods. For example, calcium can come from eating more vegetables like spinach or broccoli. However, to obtain the same amount of nutrients provided by dairy, an individual must consume more fruit and vegetables than currently recommended daily portions. When the environmental effects of these replacements are calculated, the carbon emissions and land use end up the same.



REFERENCES

- Dunne J, Evershed RP, Salque M, et al. First dairying in green Saharan Africa in the fifth millennium bc. *Nature*. 2012;486(7403):390-394. doi:10.1038/nature11186
- Romero-Velarde E, Delgado-Franco D, García-Gutiérrez M, Gurrola-Díaz C, Larrosa-Haro A, Montijo-Barrios E, Muskiet FAJ, Vargas-Guerrero B GJ. The importance of lactose in the human diet: Outcomes of a Mexican consensus meeting. *Nutrients*. 2019;11(4):2737. doi:10.3233/MNM-190366
- Storhaug CL, Fosse SK, Fadnes LT. Country, regional, and global estimates for lactose malabsorption in adults: a systematic review and meta-analysis. *The Lancet Gastroenterology and Hepatology*. 2017;2(10):738-746. doi:10.1016/S2468-1253(17)30154-1
- Itan Y, Powell A, Beaumont MA, Burger J, Thomas MG. The origins of lactase persistence in Europe. *PLoS Computational Biology*. 2009;5(8):17-19. doi:10.1371/journal.pcbi.1000491
- Salque M, Bogucki PI, Pyzel J, et al. Earliest evidence for cheese making in the sixth millennium bc in northern Europe. *Nature*. 2013;493(7433):522-525. doi:10.1038/nature11698
- Centrum V. How much and what can i eat a day? | Voedingscentrum. Accessed December 16, 2020. <http://www.voedingscentrum.nl/nl/gezond-eten-met-de-schijf-van-vijf/hoeveel-en-wat-kan-ik-per-dag-eten.aspx>
- Centrum V. Kaas. Accessed December 16, 2020. <https://www.voedingscentrum.nl/encyclopedie/kaas.aspx?target=>
- Food in Action. Voedingspiramide 2020: evenwichtiger en duurzamer. Accessed December 16, 2020. <https://www.foodinaction.com/nl/voedingspiramide-2020-evenwichtiger-duurzamer/>
- Singapore HH. 5 Benefits of Drinking Milk. Accessed December 16, 2020. <https://www.healthhub.sg/live-healthy/1495/dear-dairy>
- Singapore HH. Calcium — For Greater Bone Strength. Accessed December 16, 2020. <https://www.healthhub.sg/live-healthy/216/calcium-greater-bone-strength>
- MyHealth MM of H. Malaysian Food Pyramid. Accessed December 16, 2020. <http://www.myhealth.gov.my/en/malaysian-food-pyramid-2/>
- Hong Kong CHEU. Healthy eating food pyramid for adults. Accessed December 16, 2020. https://www.chp.gov.hk/files/her/healthy_eating_for_adults.pdf
- Hong Kong C for HP. Healthy eating for adults. Why a healthy and balanced diet ? Accessed December 16, 2020. https://www.chp.gov.hk/en/resources/e_health_topics/12703.html
- Vietnam NI of N. Nutrition situation and food-based dietary guidelines for Vietnam. doi:10.3102/0013189X008007034
- Public Health England. The Eatwell Guide. Accessed December 16, 2020. <https://www.nhs.uk/live-well/eat-well/the-eatwell-guide/>
- FAO. Food-based dietary guidelines - Nigeria. <http://www.fao.org/nutrition/education/food-dietary-guidelines/regions/countries/Nigeria/en#:~:text=The Nigerian food guide is,to be eaten in moderation>
- The Chinese Nutrition Society. Dietary Guidelines for Chinese Residents. Published 2016. Accessed December 17, 2020. http://dg.cnsoc.org/newslst_0402_1.htm
- Indonesia M of H. Peraturan Menteri Kesehatan Republik Indonesia Nomor 41 Tahun 2014 Tentang Pedoman Gizi Seimbang. Vol 2.; 2014:1-7. http://hukor.kemkes.go.id/uploads/produk_hukum/PMK No. 41 ttg Pedoman Gizi Seimbang.pdf
- EFSA. Scientific opinion on the substantiation of health claims related to calcium and maintenance of bones and teeth, muscle function and neurotransmission, blood coagulation, energy-yielding. *EFSA Journal*. 2009;7(9):1210. doi:10.2903/j.efsa.2009.1210
- EFSA. Scientific Opinion on the Substantiation of Health Claims Related to Phosphorus and Function of Cell Membranes, Energy-Yielding Metabolism and Maintenance of Bone and Teeth Pursuant to Article 13(1) of Regulation (EC) No 1924/2006. Vol 7.; 2009. doi:10.2903/j.efsa.2009.1219
- EFSA. Scientific opinion on the substantiation of health claims related to vitamin B12 and red blood cell formation, cell division, energy-yielding metabolism and function of the immune system pursuant to Article 13(1) of Regulation (EC) No 1924/2006. *EFSA Journal*. 2009;7(9):1223. doi:10.2903/j.efsa.2009.1223
- EFSA. Scientific opinion on the substantiation of health claims related to calcium and vitamin D and maintenance of bone pursuant to Article 13(1) of Regulation (EC) No 1924/2006. *EFSA Journal*. 2009;7(9):1272. doi:10.2903/j.efsa.2009.1272
- EFSA. Scientific opinion on the substantiation of health claims related to calcium and maintenance of normal bone and teeth, maintenance of normal hair and nails, maintenance of normal blood LDL-cholesterol concentrations, maintenance of normal blood HDL-choles. *EFSA Journal*. 2010;8(10):1725. doi:10.2903/j.efsa.2010.1725
- EFSA. Scientific opinion on the substantiation of health claims related to vitamin B12 and contribution to normal neurological and psychological functions, contribution to normal homocysteine metabolism, maintenance of normal bone, maintenance of normal teeth, . *EFSA Journal*. 2010;8(10):1756. doi:10.2903/j.efsa.2010.1756
- EFSA. Scientific opinion on the substantiation of health claims related to protein and increase in satiety leading to a reduction in energy intake, contribution to the maintenance or achievement of a normal body weight, maintenance of normal bone and growth or. *EFSA Journal*. 2010;8(10):1811. doi:10.2903/j.efsa.2010.1811
- EFSA. Scientific opinion on the substantiation of health claims related to riboflavin (vitamin B2) and contribution to normal energy-yielding metabolism, contribution to normal metabolism of iron, maintenance of normal skin and and mucous membranes, contributio. *EFSA Journal*. 2010;8(10):1814. doi:10.2903/j.efsa.2010.1814
- Rijksinstituut voor Volksgezondheid en Milieu. Nederlands Voedingsstoffenbestand (NEVO). Published 2019. Accessed December 17, 2020. <https://nevo-online.rivm.nl/ProductenZoeken.aspx>
- Misselwitz B, Butter M, Verbeke K, Fox MR. Update on lactose malabsorption and intolerance: Pathogenesis, diagnosis and clinical management. *Gut*. 2019;68(11):2080-2091. doi:10.1136/gutjnl-2019-318404
- Shaukat A, Levitt MD, Taylor BC, et al. Systematic review: Effective management strategies for lactose intolerance. In: *Annals of Internal Medicine*. Vol 152. ; 2010. doi:10.7326/0003-4819-152-12-201006150-00241
- EFSA. Scientific opinion on lactose thresholds in lactose intolerance and galactosaemia. *EFSA Journal*. 2010;8(9). doi:10.2903/j.efsa.2010.1777
- Host A, Halken S. Cow's milk allergy: Where have we come from and where are we going? *Endocrine Metabolic & Immune Disorders Drug Targets*. 2014;14(1):2-8. doi:10.2174/1871530314666140121142900
- Flom JD, Sicherer SH. Epidemiology of Cow's Milk Allergy. *Nutrients*. 2019;11(5). doi:10.3390/nu11051051
- Host A, Halken S. Cow's Milk Allergy: Where have we Come from and where are we Going? *Endocrine, Metabolic & Immune Disorders-Drug Targets*. 2014;14(1). doi:10.2174/1871530314666140121142900
- Center JR, Eisman JA. Genetics of osteoporosis. *Primer on the Metabolic Bone Diseases and Disorders of Mineral Metabolism: Seventh Edition*. 1999;20(6):788-804. doi:10.1002/9780470623992.ch42
- Rizzoli R, Biver E, Bonjour JP, et al. Benefits and Safety of Dietary Protein for Bone Health—an Expert Consensus Paper Endorsed by the European Society for Clinical and Economical Aspects of Osteoporosis, Osteoarthritis, and Musculoskeletal Diseases and by the International Osteoporosis Fou. Vol 29.; 2018. doi:10.1007/s00198-018-4534-5
- The European Parliment and the Council of the European Union. Regulation (EU) 1169/2011. *Official Journal of the European Union*. 2011;17(1169):18-63. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:02011R1169-20180101&from=EN>
- Drouin-Chartier JP, Brassard D, Tessier-Grenier M, et al. Systematic review of the association between dairy product consumption and risk of cardiovascular-related clinical outcomes. *Advances in Nutrition*. 2016;7(6):1026-1040. doi:10.3945/an.115.011403
- Givens D. MILK Symposium review: The importance of milk and dairy foods in the diets of infants, adolescents, pregnant women, adults, and the elderly. 2020;103(11):1-41.
- Savaiano DA, Hutkins RW. Yogurt, cultured fermented milk, and health: a systematic review. *Nutrition Reviews*. 2020;0(0):1-16. doi:10.1093/nutrit/nuaa013
- Nieman KM, Anderson BD, Cifelli CJ. The effects of dairy product and dairy protein intake on inflammation: A systematic review of the literature. *Journal of the American College of Nutrition*. 2020;0(0):1-12. doi:10.1080/07315724.2020.1800532
- Bhupathi V, Mazariegos M, Cruz Rodriguez JB, Deoker A. Dairy Intake and Risk of Cardiovascular Disease. Vol 22.; 2020. doi:10.1007/s11886-020-1263-0
- Booth AO, Huggins CE, Wattanapenpaiboon N, Nowson CA. Effect of increasing dietary calcium through supplements and dairy food on body weight and body composition: A meta-analysis of randomised controlled trials. *British Journal of Nutrition*. 2015;114(7):1013-1025. doi:10.1017/S0007114515001518
- Lu L, Xun P, Wan Y, He K, Cai W. Long-term association between dairy consumption and risk of childhood obesity: A systematic review and meta-analysis of prospective cohort studies. *European Journal of Clinical Nutrition*. 2016;70(4):414-423. doi:10.1038/ejcn.2015.226
- Dror DK. Dairy consumption and pre-school, school-age and adolescent obesity in developed countries: A systematic review and meta-analysis. *Obesity Reviews*. 2014;15(6):516-527. doi:10.1111/obr.12158
- Douglas A, Barr S, Reddy S, Summerbell CD. A critical review of the role of milk and other dairy products in the development of obesity in children and adolescents. *Nutrition Research Reviews*. 2019;32(1):106-127. doi:10.1017/S0954422418000227
- Sochoł KM, Johns TS, Buttar RS, et al. The effects of dairy intake on insulin resistance: A systematic review and meta-analysis of randomized clinical trials. *Nutrients*. 2019;11(9):1-20. doi:10.3390/nu11092237
- Kang K, Sotunde OF, Weiler HA. Effects of milk and milk-product consumption on growth among children and adolescents aged 6-18 years: A meta-analysis of randomized controlled trials. *Advances in Nutrition*. 2019;10(2):250-261. doi:10.1093/advances/nmy081
- Jensen DM. Genome-wide interactions with dairy intake for Body Mass Index in adults of European descent. *Physiology & behavior*. 2018;62(3). doi:10.1002/mnfr.201700347
- Geng T, Qi L, Huang T. Effects of dairy products consumption on body weight and body composition among adults: An updated meta-analysis of 37 randomized control trials. *Molecular Nutrition and Food Research*. 2018;62(1):1-7. doi:10.1002/mnfr.201700410
- Pinnock CB, Arney WK. The milk-mucus belief: Sensory analysis comparing cow's milk and a soy placebo. *Appetite*. 1993;20(1):61-70. doi:10.1006/appe.1993.1006
- Arney WK, Pinnock CB. The milk mucus belief: Sensations associated with the belief and characteristics of believers. *Appetite*. 1993;20(1):53-60. doi:10.1006/appe.1993.1005
- Koren Y, Armoni Domany K, Gut G, et al. Respiratory effects of acute milk consumption among asthmatic and non-asthmatic children: A randomized controlled study. *BMC Pediatrics*. 2020;20(1):1-9. doi:10.1186/s12887-020-02319-y
- Wüthrich B, Schmid A, Walther B, Sieber R. Milk consumption does not lead to mucus production or occurrence of asthma. *Journal of the American College of Nutrition*. 2005;24:547S-555S. doi:10.1080/07315724.2005.10719503
- Chalupa-Krebsdak S, Long C, Bohrer B. Nutrient density and nutritional value of milk and plant-based milkalternatives. *International Dairy Journal*. 2018;87:84-92.
- FAO. Sustainable Healthy Diets. *Guiding Principles.*; 2020. doi:10.4060/ca6640en
- EAT-Lancet commision. *Healthy Diets from Sustainable Food Systems. Food Planet Health. Summary Report of the EAT-Lancet Commission.*; 2019. https://eatforum.org/content/uploads/2019/01/EAT-Lancet_Commission_Summary_Report.pdf
- Mertens E, Kaptijn G, Kuijsten A, van Zanten H, Geleijnse JM, van 't Veer P. SHARP-Indicators Database towards a public database for environmental sustainability. *Data in Brief*. 2019;27:104617. doi:10.1016/j.dib.2019.104617
- Kramer GF, Tyszler M, Veer PVT, Blonk H. Decreasing the overall environmental impact of the Dutch diet: How to find healthy and sustainable diets with limited changes. *Public Health Nutrition*. 2017;20(9):1699-1709. doi:10.1017/S1368980017000349





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