

Questions & Answers

About the dairy products



TOPICS

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Acne

Is the consumption of milk conducive to acne?

No, no serious scientific study has shown this.

Acne, which occurs particularly during adolescence, is mainly due to the hormonal changes occurring during puberty. However, for a long time the idea persisted that foods rich in carbohydrates and fats, such as sweets, chocolate and milk products, exacerbated acne.



During the 1970's two significant studies indicated that there was no association between food and this skin disorder (1,2). Furthermore, **it is undeniable that young children, who drink milk, do not suffer from acne, while adolescents, who are inclined to turn up their noses at dairy products, are subject to it.** Some studies have even shown that lactoferrin, a milk protein, can improve acne and others have analysed the beneficial effect of foods with a low glycaemic index or that of omega-3 fatty acids and antioxidants of food origin (3,4,5). But the relationship between food and acne is still controversial. **It remains that no study has demonstrated any negative effect of milk on acne, while there are many showing the beneficial effects of dairy products during adolescence** (on bone quality and nutrient intake in particular)(6).

(1) Fulton JE Jr et coll. Effect of chocolate on acne vulgaris. JAMA 1969;210(11):2071-4.

(2) Anderson PC. Foods as the cause of acne. Am Fam Physician 1971;3(3):102-3.

(3) Kim J et coll. Dietary effect of lactoferrin-enriched fermented milk on skin surface lipid and clinical improvement of acne vulgaris. Nutrition 2010;26:902-909.

(4) Smith RN et coll. A low-glycemic-load diet improves symptoms in acne vulgaris patients: a randomized controlled trial. Am J Clin Nutr 2007;86(1):107-15.

(5) Smith RN et coll. The effect of a low glycemic load diet on acne vulgaris and the fatty acid composition of skin surface triglycerides. J Dermatol Sci 2008;50(1):41-52.

(6) Spencer EH et coll. Diet and acne: a review of the evidence. Int J Dermatol 2009;48(4):339-47.

Allergies

1/ Many people are allergic to cow's milk

No, allergies to cow's milk are relatively rare. However, allergies and intolerances * to milk are very often confused. A food allergy, like allergies to other substances, is due to a defence reaction by the immune system to substances called allergens. Cow's milk contains substances which can be allergenic: these are proteins, mainly casein, lactoglobulin and lactalbumin. The allergy to cow's milk proteins (ACMP) concerns 2% to 6% of babies and infants of less than 2 years (1) but it mostly disappears with age. At 5 years, 80%-90% of infants who were allergic to cow's milk are so no longer (2). Adults with this type of allergy are extremely rare (1 to 5 per 1000)(3). The diagnosis of a milk allergy is carried out by a specialist using very precise tests.

When a milk allergy is confirmed: allergologists recommend breastfeeding up to 6 months or the use of specifically treated (hydrolysed) milks from which the allergenic properties have been removed. The substitution of milk from other animals (goat, sheep, mare etc) or soya milk is not recommended due to the cross-allergy risk (*). Foods containing milk proteins, as will be indicated obligatorily on the label, should also be avoided. Very often, milk food products can be reintroduced after a few years (4,5).

(1) Garcia-Ara & al., Clin Exp Allergy ,2004 ;34 :866-870

(2) Wood RA, Pediatrics 2003, 111 :1631-1637

(3) Woods RK & al., Ann Allergy Asthma Immunol., 2002;88:183-189

(4) Dupont C.& al., Archives de Pediatrie 2011;18:79-94

(5) Crittenden RG& Bennett LE, Journal of the American College of Nutrition,2005;24(6):582s-591s

(*) See the Food Allergies and Intolerances back-up file

2 / Is it true that the consumption of milk can lead to the appearance of an allergy?

No, no study has shown a link between the consumption of milk products and an increase in allergies in individuals who are not already allergic. On the other hand, it is true to say that for the last thirty years or so the number of people with allergy problems has grown continually: allergies have become a real social phenomenon. Among the most frequent factors blamed by allergologists are pollution (micro-particles), smoking (including intrauterine), the reduction in breastfeeding, access to exotic foods (kiwi etc.) and the fact that people are less in contact with microbes (hygiene theory), but not milk products! It is also true that people allergic to milk proteins are very often also allergic to other substances. From this we get cross-allergies (between molecules that closely resemble each other) between cow's milk and the milk of goats and sheep, beef, soya and egg white etc. – this is what is called a food polyallergy (1).

The fact of being allergic to cow's milk shows a predisposition, a constitutional susceptibility (familial or not) which can manifest itself in various ways and develop over time.

Consequently, it is not recommended to avoid milk products if one is not allergic, so as not to run the risk of deficiencies in essential nutrients, particularly calcium. However, in infants at a risk of allergy, breastfeeding up to 6 months is highly recommended to avoid the appearance of allergic asthma (2).

(1) <http://www.ciriha.org/fr/allergie-lait-intolerance-lactose/les-allergies-croisees-et-associees.html>

(2) Chouraqui JP et al., Archives de Pédiatrie, 2008;15:431-442

BACK UP information

Food allergies and intolerances

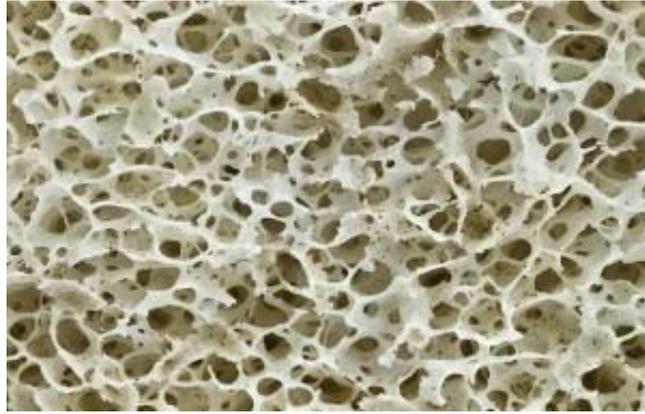
Food allergies, also called food hypersensitivities, correspond to an immunological reaction of the body to a foodstuff which it considers to be "foreign". The element responsible for this allergic reaction is a protein or a group of proteins (epitope) that the body recognises and fights against. This allergic reaction manifests itself in nausea, vomiting, intestinal pain or cramps, diarrhoea and even respiratory and skin symptoms.

A food intolerance, which can give rise to the same symptoms as an allergy, corresponds to a disorder of the digestive system. For example, with regard to an intolerance to milk, it is the enzyme which "digests" the milk which is deficient. The most frequent intolerances are to gluten and lactose.

Foodstuffs which can cause a real food allergy are relatively rare in the adult. The foodstuffs involved are mainly ones that "resemble" other allergens: the fruits of the latex group, nuts, plums etc. This phenomenon is called cross-allergy: the body is sensitive to the presence of a type of protein; it learns to recognise an epitope against which it reacts and then reacts against other substances having a "similar" epitope or antigenic determinant. Some examples of this: the cross-allergies of birch-apple, birch-nuts, milk-soya etc.

In children, eggs are the N° 1 cause of food allergies, followed by peanuts and then milk and fish. Among these, the allergies to animal products (eggs, milk, fish) decrease with age, unlike the allergies to vegetable proteins. It should also be noted that allergies are associated with an "atopic" constitutional susceptibility of genetic origin.

N.B! Allergic reactions, whether caused by food, respiratory or skin allergies, can be very violent, even fatal. In truly allergic people, the best way of avoiding an allergic reaction is to avoid the allergen responsible.



BONE

1/Milk calcium is badly absorbed, less well than that from fruit and vegetables

No, on the contrary. Calcium has an essential role in the building of the skeleton and teeth. As the body cannot produce it itself, calcium must be acquired from food. It is to be found in large quantities in dairy products, cereals, certain fruit and vegetables and also water. But calcium from dairy products is sometimes called “reference” calcium because its absorption in the intestines and its assimilation by the bones (also called “bioavailability”) is particularly high in this group of foodstuffs: assimilation reaches a record level of 30% to 35 %.(1) In addition, the other nutrients present in milk (proteins, lactose, vitamin D and phosphorus) optimise this bioavailability. Nutrients of vegetable origin are important for a balanced diet and can constitute a source of calcium. However, they generally contain a considerable number of inhibitors, such as oxalates and phytates. These bind with calcium and form insoluble salt compounds, so reducing the absorption of **calcium**. For example, cooked spinach contains 115 mg of calcium per portion but only 5 % of spinach calcium is absorbed. Hence the importance of choosing milk and dairy products as a source of calcium.

- (1) Weaver CM and Heaney RP. Calcium in human health. Totowa, NJ: Humana Press; c2006. Chapter 9, Food sources, supplements and bioavailability; p. 129-42.
- (2) Heaney RP. Dairy and bone health. J Am Coll Nutr 2009;28(1):82S-90S.

2/ It would appear that the proteins contained in milk cause a loss of bone calcium because of their acidity.

Animal proteins are not more acidifying than vegetable proteins. The main source of acid in the body is the stomach, with its abundance of very acid gastric juices. The acidity index (or PRAL index) of full milk is 0.7, i.e. low.

Past studies maintained that the acidity of milk required a neutralisation process, which used the minerals of the bones and consequently contributed to bone loss. However, in the light of more recent scientific data, this would not appear to be the case.

The earlier studies showed that a high consumption of milk protein increased excretion of calcium in the urine (1,2). It was believed that this increased excretion was caused by bone resorption (3). However, recent studies use better techniques to assess the calcium metabolism and this progress has made it possible to show that the greater calcium excretion observed would appear to be caused by an increase in intestinal absorption and not by bone resorption (4,5).

The calcium from milk is therefore definitely found in the bone matrix.

1. Linkswiler HM et coll. Protein-induced hypercalciuria. Fed Proc, 1981. 40(9): 2429-33.
2. Kerstetter JE et coll. Dietary protein, calcium metabolism, and skeletal homeostasis revisited. Am J Clin Nutr. 2003;78(3): 584S-592S.
3. Kerstetter JE et coll. High protein diets, calcium economy, and bone health. Top Clin Nutr. 2005; 19(1):57-70
4. Fenton TR et coll. Low urine pH and acid excretion do not predict bone fractures or the loss of bone mineral density: a prospective cohort study. BMC Musculoskeletal Disorders 2010;11:88.
5. Fenton TR et coll. Phosphate decreases urine calcium and increases calcium balance: a meta-analysis of the osteoporosis acid-ash diet hypothesis. Nutrition J 2009;8:41 doi: 10.1186/1475-2891-8-41.

3/ Is it true that a diet which is too rich in dairy proteins prevents bone fixation of calcium?

No, it is probably the contrary. A lot of data indicate in fact that dairy proteins can have beneficial effects, particularly if the diet provides sufficient quantities of calcium and vitamin D, because the calcium and protein contents interact constructively to influence the health of the bones . The proteins could in fact be advantageous as they increase the absorption of calcium in the intestines and stimulate bone formation through the stimulation of growth hormone production. On the other hand, it is very probable that salt, present in some cheeses, reduces the bioavailability of calcium. Many studies have also shown that a healthy diet providing sufficient quantities of calcium and proteins can help adults retain their bone mass and even prevent bone loss and fractures. **What must be avoided is over-consumption of salted food and the exclusive consumption of protein.** Once again, eating a variety of foodstuffs and nothing to excess is to be recommended.

- Heaney RP, Layman DK. Amount and type of protein influences bone health. Am J Clin Nutr 2008;87(suppl):1567S-1570S.
- Bonjour JP. Dietary protein: an essential nutrient for bone health. J Am Coll Nutr 2005;24(6):526S-536S.
- Whiting SJ et coll. Dietary protein, phosphorus and potassium are beneficial to bone mineral density in adult men consuming adequate dietary calcium. J Am Coll Nutr, 2002. 21(5): p. 402-9

Back up information

Bones and osteoporosis

Bone is a living tissue which permanently renews itself through the combined activity of two types of bone cells: the osteoclasts and osteoblasts. This is called bone remodelling. So that bone can be renewed, the osteoclasts must first break down the old bone by producing lacunae, holes, in the bone. The osteoblasts then have the job of manufacturing new bone. First they fill the holes, then this young bone tissue, osteoid tissue, is calcified by deposition of calcium crystals (this is called bone mineralisation). Calcium, together with phosphorus, constitutes the mineral framework of the bone. Vitamin D is essential for good calcium mineralisation.

Development of the bone mass with age

All individuals do not have the same bone mass, which is three quarters determined by heredity. Good living habits (physical exercise, intake of calcium etc.) make it possible to retain this capital and make it prosper.

The maximum peak for bone mass is reached at around 30 years of age; this generally remains stable until 40. After this the bone mass tends to decline by 1% to 2% per year.

During the 10 years following menopause, bone loss accelerates from 2% to 3% per year, because of the decline in oestrogen production. The loss then stabilises at about 1 % per year. For men, the loss is more gradual. From 65 years of age and on, however, their risk of suffering osteoporosis increases and they are more susceptible to fractures.

Osteoporosis

Osteoporosis (spongy bone) is a disease involving a progressive reduction in bone mass and a deterioration in the internal organisation of the bone, making it much more fragile and likely to break. The disease often progresses over many years without being detected, without symptoms or discomfort, until a fracture occurs.

Risk factors for osteoporosis

First of all, osteoporosis is a disease that has its roots in childhood, because the size, strength and mineralisation of bones reach a maximum when people are young. Those who attain a high bone mass peak during their early years will have an advantage when ageing. A calcium, protein or vitamin D deficiency at any age is obviously a disadvantage.

There are also effects due to a sedentary lifestyle, smoking, very low weight and hormones. The last-mentioned is why menopause is associated with a risk of osteoporosis.

Cancer

1/ Is there a connection between the consumption of dairy products and breast cancer?

No, the analysis of all the scientific studies on this subject concludes that there is no link between the consumption of dairy products, of whatever kind, and an increase in the risk of breast cancer (1). Breast cancer is the most frequent cancer in women and so there are many consumers of dairy products among these patients. The causes of this cancer are still not well understood, but there would seem to be a strong genetic (familial) and hormonal influence. Although milk does contain oestrogens, their concentration is 1000 times less than that produced by the woman herself and 10 times less than that of a contraceptive pill. A review of almost 45 studies was published in 2004, and confirmed since then by 2 further studies in a large cohort of women: it found that there was no association between the consumption of dairy products and the risk of breast cancer (2,3). **This is why the World Cancer Research Foundation has concluded that milk does not affect breast cancer risk and it does not advise against dairy products in its recommendations (4).**

- (1) Parodi PW., J of Amer. College of Nutrition, 2005 ; 24(6) : 556s-568s
- (2) Moorman PG & Terry PD, Am J Clin Nutr, 2004, 80 : 5-14
- (3) Kesse E & al., Am Nutr Metabol , 2007 ; 51(2) :139-45
- (4) WCRF/AICR report: Food, Nutrition, Physical Activity, and the Prevention of Cancer: a Global Perspective (2007).

2/Does the consumption of dairy products increase the risk of cancer of the colon?

No, certainly not. All the studies show that there is no such relationship between the consumption of dairy products and an increase in the risk of colorectal cancers (cancers of the intestine). On the contrary! **The consumption of calcium (from 1g per day) reduces the risk of cancer of the colon by from 20% to 30%, in both men and women.** The consumption of dairy products rich in calcium (not cheeses) is associated with a reduction in the number of intestinal cancers (1,2). More than 1 million people were followed in these various studies, leading to the conclusion of a probable protector effect of milk against colorectal cancer, due to the calcium, but also the vitamin D and certain lipids etc, contained in the milk. International recommendations for the prevention of colorectal cancer suggest a varied diet, rich in fibre and dairy products and low in red meat, saturated fats and sugared drinks, combined with regular physical exercise (3).

- (1) Cho E & al., J Natl Cancer Inst,2004 ;96(13):1015-22
- (2) Aune D. & al., Annals of Oncology, 2011 doi: 10.1093/annonc/mdr269
- (3) WCRF/AICR report: Food, Nutrition, Physical Activity, and the Prevention of Cancer: a Global Perspective (2007).

3/Does the consumption of dairy products increase the risk of prostate cancer?

It would seem that very high quantities of calcium (more than 1.5 g per day) can cause a moderate increase in the risk of prostate cancer. However, **a reasonable consumption of dairy products (3 to 4 per day) is not linked to any increase in prostatic cancer (1,2).**

Present information would seem to indicate that the potential hazard is to be found in the **excessive** consumption of calcium in various forms . The beneficial effects of dairy products in the prevention of osteoporosis, hypertension etc. should also not be neglected. Once again a healthy diet lies in variety and moderation.

(1) Severy G & al., J Natl Cancer Instit ,2006; 98(11) :794-5

(2) Park SY & al., Am J Epidemiol., 2007 ;166 (11): 1259-1269.

Back-up information

In Europe, cancer is one of the biggest causes of mortality. However, we now know that cancer is not a single disease but that there are a whole range of different cancers, with very different causes and treatment methods. In women breast cancer is the most frequent, followed by cancer of the colon. In men it is prostate cancer, then cancer of the lungs and colon. Smoking and alcohol are established factors at the origin of certain cancers, and then, according to the type of cancer, the effect of overweight, a sedentary lifestyle, hormone levels and exposures (UV, professional etc.). Pollution has only a small effect.

The increase in the number of cancers is also due to the ageing of our populations.

Many research and study teams have examined the possible causes of cancer, in order to try to prevent them. Among the factors studied, the role of food is particularly difficult to define. For a study to be scientifically valid, groups of persons must be compared who differ only regarding the point being studied, and this is practically impossible in the case of food. Hasty conclusions are to be avoided. If 99% of people die in bed, we must not conclude that the bed is to blame.

With regard to dairy products it is therefore important to give a clear definition of the factor being studied:, one of its constituents (e.g. calcium, proteins, vitamins etc.), the form (milks, fermented products, skimmed etc.) and the amount consumed.

Cardiovascular

Do milk products increase cardiovascular risk?

No, contrary to what one might think. The reason for such an idea is that scientists have long associated saturated fatty acids of animal origin with increased cardiovascular risk. Recommendations aimed at preventing cardiovascular risk include, among other things, choosing monounsaturated and polyunsaturated fats: i.e. eating less meat and more fish, more olive or colza oil and less palm oil, more fruit and vegetables etc. (1) However, in recent years research has become more discriminating regarding the exact type of fat and its origin. For example, a very reputable study followed 5,000 people for 10 years and concluded that dairy products had a beneficial effect on cardiovascular risk, while meat products were negative (2). Moreover, an updated meta-analysis suggests a possible increased risk of cardiovascular disease from replacing saturated fat with omega-6 linoleic acid (3). Another study examined the links between diet and cardiovascular health in 33,000 Dutch people over 13 years. No relationship between the consumption of dairy products and the frequency of myocardial infarction or stroke was found. In people not suffering from hypertension, a positive effect was even found for dairy products (4). Similar results were demonstrated in a population of 75,000 Swedish people with regard to the risk of stroke (5). Finally a meta-analysis of 17 studies, involving 611,000 individuals, also confirmed that the consumption of 3 dairy products per day lessened the overall cardiovascular risk by 18% (6). To conclude: when one looks at the effects of foodstuffs as consumed in real-life situations, rather than those of their components, **it would appear that dairy products, when they are taken as part of a healthy, balanced diet, contribute not only to good cardiovascular health, but also to a reduction in overall cardiovascular risk.**

(1) AHA Diet and Lifestyle Recommendations

(2) de Oliveira Otto MC & al., American Journal of Nutrition, 2012; 96(2): 397-404

(3) Ramsden C.E. et al., BMJ 2013;346:e8707

(4) Dalmeijer GW & al., International Journal of Cardiology, 2012, pub on line

(5) Larsson SC & al., Stroke 2012; 43(7): 1775-80

(6) Soedamah-Muthu SS & al., The American Journal of Clinical Nutrition, 2011; 93(1): 158-71



Choices and beliefs about consumption of dairy products

We are told that we should not drink cow's milk because ...

1/Man is the only mammal to drink milk in adulthood.

Remember what we learned in primary school: **man is an omnivorous mammal**. This means that babies feed on mother's milk and then, with age, move on to feeding on animal and vegetable protein of various origins. For a very long time (more than ten thousand years), **man has been the only species** to change his food environment, by introducing the cooking of foodstuffs, developing agriculture and animal husbandry, making bread, wine etc. and milking cows and goats. He is also alone in trying to preserve his foodstuffs: he discovered cold, brine, fermented products like cheese, butter, yogurts etc. So, yes! Man is the only species to consume dairy products in adulthood.

2/Cow's milk is meant for calves, not for human beings.

Yes, the cow's milk is meant for the calf, **but human beings feed on many foods which are not intended exclusively for them**. Eggs are meant for reproduction, meat is muscle, leaves serve to feed the plant or protect flowers and fruit etc. We are omnivores, i.e. we feed ourselves in a varied way, with foodstuffs of both animal and vegetable origin. Furthermore, the human being is the only species to have developed farming and animal husbandry in order to provide himself with food. In certain countries, he has raised cattle, in others mostly goats, or hens. He has also cultivated cereals, vegetables and fruit, all products which originally were not intended to feed man, but which man has made his own. If we were to try to feed ourselves on what was "made exclusively" for the human being, we would have to do with mother's milk and, as soon as infancy was over, we would very quickly suffer deficiencies and bad health.

3/There are populations (the Chinese for example) who hardly eat dairy products at all but live very well. Milk is therefore not indispensable.

No foodstuff is **indispensable**. What is **indispensable** to human health is a balanced diet and a sufficient intake of nutrients, such as protein constituents, fatty acids, vitamins and minerals. In this regard dairy products are an important source of very good quality protein, of vitamins A, B and D and of calcium. However, the nutritional habits of the human do indeed vary greatly according to culture and region. In China in the 14th Century, for example, milk was considered to be a rare product reserved as a tonic for the ill. However, the idea that the Chinese never eat dairy products is just a myth; the actual figures are not clear and consumption is strongly linked to the presence of cattle in the rural areas (2). What is clear is that they eat much more vegetables rich in calcium and vitamin B and less fat and

sugar than we do and that they are less sedentary than we are. This, however, does not prevent them from suffering from osteoporosis (1).

Finally, the Chinese, being Asians, are genetically different from Europeans to a significant extent and this also manifests itself in their digestive physiology. **It is therefore not reasonable to conclude that milk is not essential by comparing the Chinese with Europeans only with regard to the consumption of dairy products: there are too many other differences.**

(1) www.iofbonehealth.org/publications/asian-audit-2009

(2) Cultures des laits du monde- cahiers de l'Ocha N° 15

4/The dairy industry and its lobby control everything. The only thing that counts for them is business, not health.

It is true that the dairy industry, like all industries, promotes its products with the consumer, with scientists and with the authorities. It also sponsors many research, information and healthy-eating initiatives (Maison du lait (House of Milk), CNIEL (*French* National Interprofessional Centre for the Dairy Economy) etc.), but this does not mean that all scientists are in their pay, far from it.

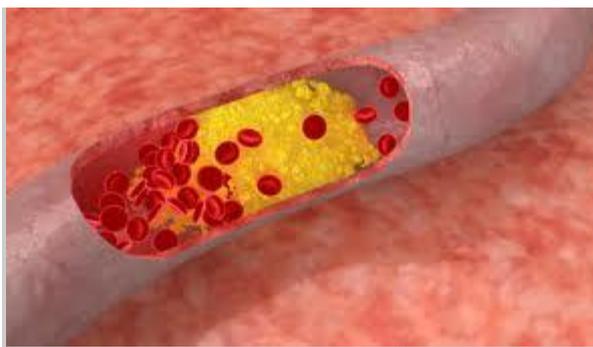
There have been numerous recommendations regarding nutrition, at the global, European and national levels; they are consistent and recommend the consumption of dairy products. The bodies concerned are mostly independent public health bodies, subsidised by public funds (WHO, INRA (French National Institute for Agricultural Research, ANSES (French Veterinary Medications Agency), CSS (Specialised Scientific Committees etc.)) or learned societies. Scientific experts give their opinions, referring to large-scale studies published in reputable scientific journals. To believe that all the scientists in the world have been corrupted by the agri-food industry is unrealistic and shows a lack of confidence in the public health authorities at all levels.

5/The milk of small mammals (sheep, goats) is better because their size is closer to that of human beings.

The size of the animal from which the foodstuff comes is not linked to the quality of the foodstuff.

If it were would we eat hen's eggs, honey, fish and shellfish?

The milk that is closest in its composition to human milk is the milk of the donkey, which is extremely rich, and the closest to cow's milk is the milk of the goat. Some people prefer to drink sheep or goat's milk (in certain regions, certain cultures) and this is because, historically, they have bred these animals rather than cattle. Globalisation and gastronomy have done the rest.



Cholesterol

Dairy products, bad for cholesterol?

No, what are bad for cholesterol are certain fats. For many years now, with good reason, the **excessive** consumption of butter, cream, full-fat cheeses etc. has been associated with the bad kind of cholesterol. However, it has been found that certain populations particularly fond of milk and dairy products suffer less from hypercholesterolaemia than others (for example, the Massai or the Cretans). A recent study has even shown that the consumption of dairy products favours the good (HDL) kind of cholesterol (1).

It is not clear from the present state of our knowledge which elements among all those studied (glycaemic index, saturated or unsaturated, omega 6/omega 3 fatty acid ratio etc.) have the biggest effect on the balance between good (HDL) and bad (LDL) cholesterol. All these factors play a part and combine with genetic, metabolic and lifestyle factors. **This is why the WHO recommends a healthy lifestyle and a varied and balanced diet, without excess fat, in the fight against bad cholesterol.** In practice milk and yogurts, low in fat and a major source of calcium and nutrients, should be eaten regularly (3, of which 1 yogurt per day), with cheeses preferably in a low-fat form (2).

References:

1. Hostmark AT et coll. Serum HDL cholesterol was positively associated with cheese intake in the Oslo Health Study. *J Food Lipids* 2009;16(1):89-102.
2. World Health Organization European Region. Food based dietary guidelines in the WHO European Region, 2003 - www.euro.who.int/Document/E79832.pdf

Dairy cows

1/ Do cows suffer when being milked?

No, in fact they suffer if you don't milk them. Just like a breast-feeding woman, when the pressure of the milk in her udder is relieved the cow feels better. Dairy farmers are well aware of the necessity of regular, uninterrupted milking in a calm atmosphere. From this point of view milking machines are better suited to the job than a child or a beginner trying to milk an animal ... In the emptying action, rubber cups are placed on the cow's teats and the milking machine produces an alternating movement of massage and suction, reproducing the sucking of the calf. Milking time is also a special moment for both the farmer and his cows: a time when, twice a day, he can check them to see that they are alright and have everything they need.

2/Antibiotics are found in milk

Milk sold to consumers and to the producers of dairy products must, in accordance with the law, be free of antibiotics. To ensure that there is no trace of medicines in the milk, samples are taken on the farm to be analysed for quality-control purposes.

The farms which supply Danone are subject to a minimum of 3 analyses per month. In addition, each consignment is tested before being released at the factory. **If any traces of antibiotics are detected, the milk is destroyed.**

3/Growth hormones are found in milk

Not true. Some years ago, the Americans used the hormone somatotropin, a substance intended to make milch cows more productive, better known under the name of bovine growth hormone. However, studies revealed the dangers involved in using this. In Europe (and Canada), the use of growth hormones in cows is **strictly forbidden**. They **cannot** therefore **be found in milk**.



4/What happens when a cow is sick?

If a cow is sick, it is treated of course, but its milk is collected separately and discarded. Strict monitoring is possible because of the technical and veterinary supervision of the farmer and the keeping of the animals' "health record": it contains all information concerning analyses, screening, vaccines, veterinary orders, prescriptions, samples,... At the European level, the supervision and follow-up of contagious bovine diseases (tuberculosis, brucellosis etc.) are the responsibility of the Ministries of Agriculture (Veterinary Services Divisions).

To sum up, **the milk of a sick cow**, whatever the treatment the cow is undergoing, is **discarded** and is not consumed or converted into other products.

5/Why give a cow anything to eat except grass?

The cow is a ruminant herbivore. It has the particular ability to produce milk from grass, so enhancing the value of land which could not otherwise be used. The **feed ration of a cow varies according to the season:**

- fresh pasture grass during the good season,
- hay and silage during the winter.

However, so that a cow can produce milk nearly the whole year round (in sufficient quantities and of a good quality), grass is not enough. The animal needs a diet rich in energy, proteins, vitamins and minerals. When it is lactating fully, its diet is supplemented by:

- Cereals (wheat, barley)
- "Concentrated" foodstuffs such as plant granules (dehydrated alfalfa) and "oil cakes" (dry biscuits) of soya, sunflower or rapeseed.

6/ Is the diet of cows properly controlled?

Dairy farmers must comply with very demanding standards with regard to feeding their animals. In Europe, this diet is exclusively of plant origin with mineral supplements. A cow's average ration is composed of 60% grass, 20% maize, 12% cereals, 6% oilseed cake and 2% vitamins and minerals. This means that an average of 92% of the cattle feed is directly produced on the farm: directly from the producer to his animals. In addition, feed supplements are strictly controlled by regulations: detailed labelling of cattle-feed products for example. As far as Danone is concerned, its dairy farmers are particularly aware of the importance of feed quality, which is why they regularly open their gates to you to allow you get to know life on their farms.

7/ Does livestock production cause greenhouse gas emissions?

During one of the digestion phases of cows, called rumination, the micro-organisms of the rumen break down plant cellulose and release gases, in particular methane, which the cow eliminates. This gas is one of those involved in the greenhouse effect, which is why it is sometimes said that cows are partly responsible for global warming.

In 2006 the FAO (the United Nations Food and Agriculture Organisation) published a report which estimated that the entire livestock sector was responsible for 18% of greenhouse gases (GHGs). Livestock includes sheep, goats and also pigs, poultry and of course cattle. In April 2010, the FAO published a similar report, but this time concentrating on **dairy farming: this is responsible for only 3.7% of greenhouse gas emissions (1)**.

(1) www.fao.org/agriculture/lead/themes0/climate

8/Are any GMOs in the feed given to cows to be found in milk?

The diet of dairy cows in Europe often includes ensiled maize (approximately 20%), but on the majority of farms, this maize is of their own production and they do not grow **transgenic maize**. With regard to feeding cows with industrially produced maize, the label must mention the presence of GMOs and the farmer is then alerted.

In addition, studies have been carried out to see if such a diet presented risks for the health of the animals themselves, as well as for that of the human beings who consume the milk. The governmental agency, the European Food Safety Authority (EFSA), has studied the possible presence of DNA or recombinant proteins in the milk of animals fed with GMOs. One of their conclusions is that, after ingestion, a rapid break down into small fragments of the DNA or the proteins can be observed in the digestive system of the animals. **Fragments of DNA or of GMO proteins have not been detected in the tissues, fluids or consumable products of animals fed with GMO feedstuffs (1)**.

In addition, a British committee of advisers and scientists has reported the following conclusions of studies carried out on GMO foodstuffs intended for human beings and animals (2): the presence of residues of DNA, of genes of GMO origin in the milk, eggs and meat of animals fed on GMO feedstuffs has not been proved.

In Europe, it is therefore improbable that cows have been fed on genetically modified feedstuffs and, if they have, this is only in negligible quantities and without any demonstrated ill effect

(1) EFSA Panel on Genetically Modified Organisms (GMO) (2011) Scientific Opinion on Guidance for risk assessment of food and feed from genetically modified plants. EFSA Journal 9(5) : 2150, 37 pages. [\[On line\]](#)

(2) GM science Review - First and Second Report - An open review of the science relevant to GM crops and food based on interests and concerns of the public - Prepared by the GM science review panel (July 2003 and January 2004). Full versions of reports available on line at the following site [\[On line\]](#).

Healthy Diet

1/ Milk, yogurt or cheese?

In nutrition, the term “dairy products” includes milk, cheese, yogurts and fermented milks. It is usually recommended **to alternate and vary consumption within these 3 groups of dairy products so as to benefit from all their particular characteristics.**

Milk is generally drunk in a pasteurised form; yogurt is inoculated with two specific ferments, *Streptococcus thermophilus* and *Lactobacillus bulgaricus*, while cheeses are also produced by the fermentation of milk but in a coagulated form (by the addition of rennet).

Cheeses are the richest in calories, particularly due to their fatty acid content, while their energy density is correlated to their calcium content. The cheeses which are highest in calcium are those which are the driest and most compact. These are milk concentrates (Comté, Emmental etc.). A 30g portion of these cheeses provides 1/3 of the recommended daily calcium requirements. Then there are the blue-veined cheeses (Blues, Roquefort etc.), soft cheeses (Camembert, Munster etc.) and soft white cheeses (petits-suisse, fromages blancs etc.).

Milks and fermented milks (among which yogurt) are rich in proteins of very good nutritional quality and also in bioactive peptides, Group B vitamins and calcium. Their energy density is in general low and they also contribute to hydration. There is a wide variety of tastes and textures. Yogurts are in addition more easily digested than milk because they contain bacteria which help in the digestion of lactose.

It is therefore important to vary one’s consumption of dairy products in order to benefit from their different nutritional qualities, while enjoying one’s food.

Cahiers de nutrition et de diététique, 2011 ; 46 :305-314

2/ What about vegetable “milks”? Are they a good alternative to cow’s milk?

Everything that’s white is not milk! The term “milk” may only be used for the product of the mammary secretion of mammals. Therefore the correct term is vegetable “juices”, not “milks”. These juices come from cereals or nuts (oats, rice, chestnuts, quinoa etc.), soya or oilseeds (almonds, hazelnuts etc.), soaked in water and then filtered.

The nutritional content of vegetable juices in terms of calcium and proteins is much less than that of milk and is therefore not in any way a proper substitute for milk, in particular for the needs of children. They may contain other substances (all natural) which give the juice texture, taste or a characteristic: vegetable oils, salt, natural thickeners, sweeteners (sugar, agave), flavourings (vanilla, chocolate). Certain products are artificially enriched with calcium by the addition of lithothamnion, a seaweed naturally rich in calcium, magnesium and iodine and very well assimilated by the bones.

In the case of allergy, vegetable extracts (also soya) can be sources of allergic reactions or cross-allergies, much more frequently than cow’s milk.

Vegetable juices are therefore not a nutritional alternative to cow’s milk during the child’s growing period or in the elderly.



3/ Milk is not indispensable! Calcium can be found in foods other than milk.

This is true but in smaller quantities and with lower bioavailability. Calcium is found in certain green leafy vegetables, in fruit, cereals ... and also in water! However, the calcium of vegetable origin is made insoluble by the presence of fibres, phytic acid (cereals, bran, soya, haricot beans) and oxalic acid (spinach, sorrel, beetroot, cacao). This explains the lower bioavailability of calcium of vegetable origin. For example, 25 cl of milk corresponds to 1 kg of cabbage. Furthermore, a calcium deficiency can be found in macrobiotic vegetarians (without foods of animal origin) (2). With regard to the calcium content of water, although the bioavailability is satisfactory, the use of water-softening (anti-scale) equipment for tap water as well as the difficulties of supply and the cost of mineral waters do not help the consumption of this source of calcium.

When comparing the different sources of calcium, the calcium content of the foodstuffs, its absorbability and also its bioavailability must be considered. Once the calcium is absorbed from the intestine, it must be retained in the bones and not excreted in the urine. We must therefore distinguish between absorbability (in the intestines) and actual bioavailability (for the bones). Milk calcium is particularly bioavailable. The simultaneous absorption of calcium and phosphorus in a ratio between 0.5 and 2 is indispensable for efficient calcium retention by the bones; the Ca/P ratio in milk is 1.3. Furthermore, milk calcium enjoys the "meal effect", which is favourable to its absorption and retention in the bones, something which is not the case with other sources of calcium consumed outside meals. Consequently, dairy products are the principal source of calcium in food (70% of the daily intake in the European diet (1). Milk is also the cheapest source of calcium and vitamins A and B (3). This is why it is recommended to have 3 dairy products as part of one's daily diet.

(1) Guégen L.&al., J Am Coll Nutr, 2000 ;19(2) :119s-136s

(2) Leblanc JC&al., Eur.J Clin Nutr, 2000 ;54(5) : 443-9

(3) Drewnowski A., J Am Coll Nutr. 2011 Oct; 30(5 Suppl 1):422S-8S.

4/ Is the milk of goats and donkeys better for health than cow's milk?

The milk of goats and sheep closely resemble cow's milk for nutritional content, particularly calcium and proteins. The few differences there are concern the content in vitamins B12, B9 and Beta-carotene, in which cow's milk is somewhat richer. For lipid and calorie intake, goat's milk is equivalent to full cow's milk. These milks differ more in taste than in composition. Most people who are allergic to cow's milk are also allergic to goat's and sheep's milk. Donkey's milk, which is less allergenic, is the one that is closest to human milk; it is therefore not suitable for the nutritional needs of older children and adults. It is also much more expensive!

(Cerin)

Hypertension

1/ May I eat dairy products if I have high blood pressure?

Yes, of course! It is even **recommended in order to help control high blood pressure**. A considerable number of scientific studies have shown the beneficial effect of dairy products on the blood pressure of people suffering from hypertension. For example, a meta-analysis of the results of 5 studies involving 45,000 subjects, of whom 11,500 were hypertensive, found **a reduction of 13%** on average in the risk of hypertension, associated with the regular consumption of dairy products of all types. This reduction even reached 16% for milk and yogurts (1). Similarly, the recent official report of the American government confirms that dairy products do indeed have a beneficial effect on high blood pressure (2). This effect can probably be attributed to the various nutrients – calcium, potassium, magnesium, vitamins and proteins etc. – contained in dairy products. In the case of hypertension, it is therefore recommended to include dairy products in one's diet.

(1) Ralston RA & al., Journal of Human Hypertension, 2012;26(1): 3-13

(2) McGrane MM & al., Current Cardiovascular Risk Reports, 2011 ; 5(4) : 287-98

2/ Is there any relationship between diet and high blood pressure?

Yes, life-style, including diet, has been shown to be very important in the fight against high blood pressure. The type of diet recommended is called the **DASH diet** (Dietary Approach to Stop Hypertension). It is based on a diet that is low in fats and salt, rich in fruit and vegetables together with dairy products, which are low in fats and rich in calcium (milk and yogurts) (1). Ideally, this should be accompanied by the exclusion of smoking and the excessive consumption of alcohol and by regular physical exercise. Dairy products are therefore an integral part of a healthy and balanced diet.

(1) DASH Collaborative Research Group, NEJM 1997;336(16):1117-1124



Immunity

1/Is there a link between the consumption of milk and the production of mucous? Does giving up milk prevent recurrent colds and ear infections in children?

No. No study would appear to confirm that the drinking of milk increases the production of mucous or causes other symptoms associated with colds.

If healthy people are exposed to the cold virus, no difference in terms of infection is found according to whether they drink milk or not (1). Other studies have shown that cow's milk does not cause the production of mucous nor the obstruction of the bronchi leading to asthma and other symptoms (2). Furthermore, the consumption of dairy products is widely recommended in the treatment of people with cystic fibrosis, who already suffer from an excessive production of mucous! (3)

The mucous myth probably has its origins in the creamy texture of milk which, as it spreads over the mouth and throat, can give a mucoid sensation. Some studies in fact have shown an association between the belief in this myth and the declaration of symptoms (1,4,5). In such persons the same effects were also declared with soya milk.(4)

The treatment of repeated ear infections in children requires a careful and complete medical diagnosis and therapy. The Nutrition Committee of the French Paediatric Society points out **that in no case should a type of foodstuff, such as dairy products, be removed from the diet because this would entail the danger of major deficiencies** (6).

1.Pinnock, C.B. et coll. Relationship between milk intake and mucus production in adult volunteers challenged with rhinovirus-2. *Am Rev Respir Dis*, 1990. 141(2): p. 352-6.

2.Wuthrich, B. et coll. Milk consumption does not lead to mucus production or occurrence of asthma. *J Am Coll Nutr*, 2005. 24(6 Suppl): p. 547S-55S.

3. Fiche la mucoviscidose- Hautes Autorités de Santé – novembre 2008 www.HAS-sante.fr

4.Pinnock, C.B. and Arney W.K. The milk-mucus belief: sensory analysis comparing cow's milk and a soya placebo. *Appetite*, 1993. 20(1): p. 61-70.

5.Arney, W.K. and Pinnock C.B. The milk mucus belief: sensations associated with the belief and characteristics of believers. *Appetite*, 1993. 20(1): p. 53-60.

5.Lee, C. and Dozor A.J. Do you believe milk makes mucus? *Arch Pediatr Adolesc Med*, 2004. 158(6): p. 601-3.

6 .<http://fcorpet.free.fr/Denis/W/Lait-toxique-enfants-Comit-Nutr-SocFrPed-Archiv-Pediatrie08.pdf>



2/ Is a dairy-free diet beneficial for people suffering from rheumatoid arthritis or many other diseases (psoriasis, multiple sclerosis etc.)

No diet excluding dairy products is recommended by the international scientific authorities in the treatment of autoimmune diseases (1).

This anti-milk assertion started with the results observed by Dr Signalet in the '80s. The diet he advised was close to that of prehistoric man: raw foodstuffs, no milk derivatives, no cereals such as wheat, oats etc. but included nonetheless vitamin supplements and lactic ferments! (2) He reported positive effects in varying degrees for this diet in 91 diseases, among which remissions in rheumatoid arthritis. However, a characteristic of this disease is the fact that it develops in flare-ups, interspersed with periods of remission of varying lengths. One would therefore have to compare a very big number of patients over many years, with and without dairy products, in order to validate these observations.

Recently a scientific review of the data concluded that such a diet lacked any scientific validity, was unfeasible in practice and would produce harmful effects in the long term (3)

It should be remembered that in no case can these diets replace the various efficacious treatments of rheumatoid arthritis.

(1) Recommandations de bonne pratique – polyarthrite rhumatoïde- HAS- mars 2007

(2) Signalet J., L'alimentation ou la troisième médecine, Ed. FX de Guibert, 2004

(3) Hagen KB et al., Cochrane Database Syst. Review, 2009, jan 21, review



Intolerances

1/Many adults cannot digest milk properly

This is true, many adults cannot digest milk properly. Between **6% and 10% of people in France** suffer from wind, bloating, and diarrhoea if they drink too much milk (1). **One possible cause of these problems is an intolerance to lactose (2)**. Lactose is a sugar abundantly present in milk (45 g/litre) which has to be hydrolysed (“broken down”) into glucose and galactose in order to be digested. The intestinal enzyme necessary for this breakdown is called lactase and it functions at full capacity in newborn babies to digest the lactose of mother’s milk, but with age the quantities diminish. Some adults who do not produce enough lactase become intolerant to lactose consumed in large quantities, because they can no longer digest it properly. The frequency of this lactase deficiency is extremely variable in the world: 3% in Sweden, 99% in China, 10% in the North of France, 70% in Sicily and is probably related to genetic developments due to nutritional habits.

(1) Le lait: vrais et faux dangers, JM Bourre, éditions Odile Jacob, 2010

(2) Vesa T H, Marteau P, Korpela R., Lactose intolerance, J A m Coll Nutr 2000 Apr;19:165S-175S.

2/ What should I do if I cannot digest milk properly?

An intolerance to lactose **is not a reason for giving up milk totally** and the essential elements, such as calcium and certain vitamins, that it contains. This intolerance is related to the dose of lactose taken and, usually, starts to appear from a dose of 12g of lactose per day (1). A diagnosis of intolerance to lactose may be confirmed by medical tests; talk to your doctor about this. From the diet point of view, if you cannot digest lactose properly, you should adapt your consumption by:

- Giving preference to yogurts and fermented milks, which are less rich in lactose (the presence of ferments helps digestion). This recommendation is confirmed by the European Food Safety Authority (2);
- Eating hard cheeses (Gouda, Parmesan, Emmenthal etc.), which are very low in lactose;
- Choosing a milk which is low in lactose, designed for its digestibility.

It is also possible to take enzymes of the lactase type, prescribed by a doctor (3).

Be careful also of the many medications which contain lactase!

To sum up, **there are a lot of dairy products which are more digestible than a fine big glass of milk,** and are just as good for you!

(1) Bhatnagar S. & Aggarwal R., Lactose Intolerance, BMJ 2007, 334:1331-1332

(2) EFSA. 2010. Scientific Opinion on the substantiation of health claims related to live yogurt cultures and improved lactose digestion (ID 1143, 2976) pursuant to Article 13(1) of Regulation (EC) No 1924/2006. EFSA Journal 8:1763.

(3) Montalto M. et al., Management and treatment of lactose malabsorption, World J Gastroenterol 2006 Jan 14; 12(2) :187-191.



Weight

1/ Are dairy products fattening?

No, what are fattening are excessive fats and sugars, as well as the lack of physical activity. Overweight and obesity are real problems, which have increased enormously in our Western countries in the last 20 years, thus increasing the risk of disease and death. The factors at the origin of this epidemic of overweight are linked to the imbalance between food consumption and the amount of energy expended, but they are also genetic (1).

Dairy products such as milk, yogurt and cheese are part of a healthy, balanced diet and are recommended by health authorities (2). Furthermore, major health surveys show a link between an insufficient consumption of calcium and the risk of obesity (3).

The consumption of dairy products, as part of a varied and balanced diet, can in no way be blamed for an increase in weight. Confirming this, a recent meta-analysis of 19 studies has shown, not only the absence of any link between the recommended consumption of dairy products and the risk of overweight, but in fact the reverse tendency (4). For example, in the context of a slimming diet, a meta-analysis has shown that the consumption of 3 to 4 dairy products daily contributed to weight loss in 883 adults(6). As for yogurts, it has also been shown that their consumption can contribute to maintaining the lipid (triglycerides) and glucidic (insulin resistance) profiles(7).

For all these reasons, milk products are an appropriate food group, even for people suffering from overweight (8).

- (1) <http://www.who.int/features/factfiles/obesity/fr/index.html>
- (2) <http://www.eufic.org/index/fr/show/consumers/>
- (3) Mirmiran P & al., Int J Obesity, 2005 ;29:115-121
- (4) Louie JC & al., Obesity Review 2011;12(7):582-592
- (5) Mozaffarian D.& al., N Engl J Med 2011; 364:2392-2404 June 23, 2011 DOI: 10.1056/NEJMoa1014296
- (6) Abargouei AS, Janghorbani M, Salehi-Marzijarani M, Esmailzadeh A. International Journal of Obesity 2012; 36(12): 1485-93.
- (7) Wang H & al., Nutr.Res. 2012, <http://dx.doi.org/10.1016/j.nutres.2012.11.009>
- (8) Dougkas A, Reynolds CK, Givens ID, Elwood PC, Minihane AM. Associations between dairy consumption and body weight: a review of the evidence and underlying mechanisms. *Nutr Res Rev.* Feb 15 2011:1-24.

2/ And in adolescence?

Adolescence is a crucial period for the construction of bone mass, so necessary throughout life! A calcium intake through the consumption of dairy products is particularly to be recommended at this time of life (1)(see chapter on bones).

This is why many studies have investigated the effect of dairy-product consumption in adolescence and it has been found that drinking milk does not affect weight in either girls or boys. Recently, 2 studies have even shown a positive effect on the Body Mass Index (BMI) and on abdominal fat in adolescents. (2,3)

Eating and drinking dairy products during adolescence ensures solid bones for old age and does not cause an increase in weight!

(1) <http://www.fao.org/WAIRDOCS/WHO/AC911F/AC911F00.HTM>

(2) Abreu S & al., Eur J Clin Nutr , 2012 ; 66 :830-35

(3) Abreu S & al., Eur J Pediatr 2012, 171(10): 1467-74

3/ Cut out dairy products when dieting?

No, on the contrary. Most slimming diets aim at the reduction of fats and sugars, which are bad for the figure. When choosing dairy products you should go for skimmed and low-fat products, without added sugar. However, weight and fat-tissue loss has been found to be **much greater** in diets which include calcium (through yogurts for instance) than in diets without calcium (1). For example, a meta-analysis of slimming-diet studies showed that the consumption of 3 to 4 dairy products per day contributed to weight loss in 883 adults (2). Large-scale health analyses show a relationship between a low calcium intake and obesity (3) In addition, the consumption of dairy products gives a strong feeling of being full - consequently fewer hunger pangs and greater ease in keeping to one's diet (4). So rather than eliminating them, you should include low-fat dairy products with no added sugar in your low-calorie diet to make it more efficient.

(1) Zemel MB & al., Int J of Obesity, 2005 ;29 :391-397

(2) Abargouei AS, Janghorbani M, Salehi-Marzijarani M, Esmailzadeh A., International Journal of Obesity 2012; 36(12): 1485-93

(3) Mirmiran P & al., Int J Obesity,2005 ;29:115-121

(4) Seibly P & Ellis V, British Journal of Nutrition, 2012;104:1241-1248