

Regular vs Organic (& Raw) (continued)

- Raw organic milk contains healthy bacteria, many digestive enzymes, growth factors and immunoglobulins (antibodies) that are lost in pasteurisation.
- It also provides beneficial fats, amino acids, highly bioavailable proteins, vitamins (A, B, C, D, E, and K) and minerals (calcium, magnesium, phosphorus, and iron).

Calcium

- Dairy products can also cause calcium losses at the same time as increasing calcium intake - absorption from dairy is about 32%.
- Like all animal protein, milk acidifies the body's pH, which can be neutralized by calcium from the bones that is then removed via the urine, causing a calcium deficit - 30% from milk and 60% from cheeses is wasted this way.
- In contrast, calcium absorption from green leafy vegetables (GLF) ranges from 50%-60%, although it is important that they are low in oxalates.
- Furthermore, GLF like broccoli and spring greens are alkaline so less calcium is lost.

Health Benefits

- Milk and dairy products are providers of calcium, phosphorous, magnesium and protein, which are all essential for healthy bone growth and development.
- Increasing Vitamin D levels is as important to ensure calcium is utilized properly.
- Potassium helps to lower blood pressure, although you would need to drink a significant amount to feel the benefits - that would be better helped by eating less salt.
- Calcium helps maintain a normal heart rhythm and nerves to communicate to each other, which signals muscles to contract and relax.

Health Risks

- Regular milk unnecessarily raises the saturated fat and potentially the cholesterol content of the diet.
- Excess calories attached to drinking any beverages with sugar, especially milk - 250ml (1 glass) of semi skimmed milk has 138 calories.
- The casein in most milk is genetically altered, creating a much higher likelihood of inflammation, autoimmune disease, and even type 1 diabetes.
- Most cows are given antibiotics and a genetically engineered form of bovine growth hormone that can increase levels of the insulin-growth factor 1 in consumers - that is associated to several cancers.
- Dairy may cause other problems like constipation, irritable bowel syndrome, bloating, gas, diarrhoea, allergies, eczema and acne due to allergic / intolerant effects and the above mentioned factors.

The Bottom Line:

Milk is a good source of protein and key nutrients like calcium. Microfiltration appears to be best method of production if you want your milk processed and bacteria free. Organic should be the only option to avoid unwanted chemicals, hormones and antibiotics. Raw milk is an option, as it has the best nutrition and health benefits, but only if your immune system is strong. A2 could be helpful for those that suspect themselves intolerant, but not if you have been medically diagnosed. So, if you want to eat dairy without the potential problems try goat and sheep, as it has the health benefits without the risks. And remember that dairy isn't the only good source of calcium.... just saying!



Welcome to Vacherin's food in focus.

Each month our nutritionist Gary Baverstock will provide some basic science and will help to demystify certain foods in our diet.

Milk

- Milk is a white liquid produced by the mammary glands of mammals.
- A primary source of nutrition for young mammals before they can digest other food.
- Early-lactation milk contains colostrum, which carries the mother's antibodies to its young and can reduce the risk of many diseases.
- Milk contains many other nutrients, mainly the carbohydrate (sugar) lactose.
- Worldwide, production peaked at 730 million tonnes in 2011, from 260 million dairy cows.
- Throughout the world, there are more than six billion consumers of milk products.
- Up 60% of the world's population lose the ability to digest lactose after childhood.
- Many nutritionists agree in essence that it should not be part of the adult diet; genetically speaking, the human body was not designed to drink milk after the weaning period.

Nutritional Composition of Milk (inc. Sheep and Goat)

Component (g)	Whole Milk >3.25%	Semi Skimmed (2%)	Skimmed <0.5%	Goats	Sheep
Water	88.32	89.33	90.84	87.03	80.70
Energy (kcal)	60	50	34	69	108
Carbohydrate	4.52	4.68	4.96	4.45	5.36
Fat	3.25	1.97	0.08	4.14	7.00
Protein	3.22	3.30	3.37	3.56	5.98
Lactose	5.26	5.01	5.09	N/A	N/A
Cholesterol (mg)	10	8	2	11	27

Based on 100g values

Homogenization

- This is a treatment that prevents a cream layer from separating out of the milk.
- Milk is pumped at high pressures through very narrow tubes, breaking up the fat globules through turbulence and cavitation.
- Homogenized milk tastes blander but feels creamier in the mouth than non-homogenized, and it is whiter and more resistant to developing off flavours.

Pasteurization

- Pasteurization kills harmful microorganisms by heating the milk for a short time and then immediately cooling it.
- This process produces a 99.999% reduction in the number of bacteria in milk, rendering it safe to drink for three weeks if continually refrigerated.
- However, some of the vitamin and mineral content is lost in this process - soluble calcium and phosphorus decrease by 5%, vitamins B3 & 12 by 10%, and vitamin C by 20%.

Microfiltration

- Microfiltration is a process that partially replaces pasteurization and produces milk with fewer microorganisms and longer shelf life without a change in the taste of the milk.
- Cream is separated from the whey and is pasteurized, but the whey is forced through ceramic microfilters that trap 99.9% of microorganisms in the milk.
- The whey is recombined with the cream to reconstitute the original milk composition.

Lactose Intolerance

- For 95% of the UK population, the lactase enzymes in their stomach lining easily breaks down lactose so that the body can digest it.
- The other 5% do not have enough of the enzymes so they are unable to digest it.
- This means the sugar ferments in the lower intestine, which causes symptoms such as bloating, pain, loose stools, or diarrhoea.
- After a stomach upset where the lining of the stomach is disturbed, people can get temporary lactose intolerance.

A2 Milk

- There are two forms of beta-casein (milk protein) [A1 & A2] found in normal cow's milk.
- A2 was the beta-casein produced by cows before they were first domesticated, over 10,000 years ago (agricultural boom) - A1 producing cattle (Holstein/Friesian) have been favoured since, as they produce greater yields.
- The A1 protein breaks down to produce a peptide, which instead of being broken down into individual amino acids, causing the over activation of systems that are not needed, such as:
 - Slowing down the time that food takes to move through the gut, exacerbating skin conditions and making mucus stickier, symptoms similar to that of lactose intolerance.
- A2 milk is metabolized differently (not broken down to the problematic peptide) and is considered safe and nutritious, and has no known negative effects on human health.
- The A2 protein is found in human milk and is also produced by sheep and goats.
- It is important to know however, whether you are intolerant to the A1 protein, or are lactose intolerant, as A2 milk is not suitable for those with diagnosed lactose intolerance.

Regular vs Organic (& Raw)

- Contains healthier omega 3 fats and a better omega-3:6 profile than non-organic milk.
- Higher fat soluble vitamins (not skimmed milks), such as Vitamin E and beta-carotene compared to regular, and is lower in saturates.
- Organic feed must be 60% grass, plus good fats and proteins (from roasted soybeans and oilseeds such as flax meal or sunflower seeds).
- Hay, straw or cereals, often with added oils are used in regular milk that produces less nutritious milk with higher levels of the less beneficial omega 6 fats.
- Organic milk has far less chemicals - no herbicides, artificial fertilizers or any artificial growth hormones are used, and antibiotic use is limited.