Guide: Milk alternatives for coffee

Cappuccino, latte macchiato, flat white – the world of coffee wouldn't be the same without milk foam. And plant-based milk is on the rise: for vegans, the lactose-intolerant, and curious coffee lovers alike. This guide explores which milk alternatives truly shine in your cup – from foamability to flavour harmony.



Try out the different milk alternatives. With our fully automatic coffee machines, there are no limits to your creativity. You will find the following types of milk in this document:

Cereals	Nuts	Pulses and seeds
Oat milk	Almond milk	Soya milk
Spelt milk	Cashew milk	Pea milk
Millet milk	Hazelnut milk	Lupin milk
Rice milk	Coconut milk	Hemp milk
	Rice almond milk	

Note: In this document we refer to the tests of Circle Products GmbH.

Cereals

	Oats	Spelt	Millet	Rice
Flavour	Pleasantly sweet, but with a distinct flavour	Natural sweetness	Strong flavour	Tastes strongly of rice, but pleasant natural sweetness
Milk foam	Surprisingly good, even for latte art	High foam volume	Only suitable to a limited extent	Difficult, collapses quickly
Cappuccino	The espresso flavour is overwhelmed	Caramel note, slightly cereal-like	Espresso is completely overlaid	Harmonises well with espresso

Oat milk

Oat milk is a type of cereal milk. It is made from fermented grain. Due to the production-related conversion of starch into simple sugars, oat milk has a pleasantly sweet flavour. However, due to the strong flavour of oats, it may not appeal to everyone. In the cappuccino, the cereal flavour is only minimal and leaves a sweet note. Unfortunately, the espresso flavour is somewhat suppressed, with lighter roasts quickly disappearing completely. On the other hand, the oat milk foams up really well - and with a little fine-tuning, it even works with latte art. A really good alternative!

Spelt milk

Spelt milk belongs to the group of cereal milks. It looks very similar to conventional cow's milk. The nutritional value depends on the type of grain used and can be compared with cow's milk in terms of vitamins and minerals, but not in terms of protein content. Spelt milk is low in high-quality proteins, calcium and vitamins. However, these can be added. Foaming spelt milk produces more foam than other types of milk. The flavour of the frothed milk has more natural sweetness than the other varieties. Latte art works very well with spelt milk, it is easy to froth with fine pores. The cappuccino has a pleasant caramel flavour and tastes only slightly of cereal.

Millet milk

Millet milk is also a type of plant-based milk. Compared to oat milk, it is more yellow in colour and has a stronger flavour. It is rich in carbohydrates and, with a fat content of just 1%, is extremely low in fat. However, millet milk is only suitable for foaming to a limited extent. The foam settles and turns watery within seconds. The flavour also does not go well with espresso; any aromas are overshadowed by the dominant millet flavour. The combination of espresso and millet milk was the least convincing of all the alternatives tested.

Rice milk

Rice milk consists of wholegrain rice and water, which is emulsified with oil to thicken it, and has a strong rice flavour. Rice milk is a type of cereal milk that tends to be low in nutrients, vitamins and proteins - vitamins or calcium are often added by the manufacturers. The fermentation of rice during the manufacturing process produces a pleasant natural sweetness. At a good 10 %, rice milk is rich in carbohydrates. However, rice milk is not at all suitable for foaming, as the protein content is super low at 0.2 %. The foam collapses quickly and separates into a watery, foam-like component. When cold, the thin milk tastes strongly of rice and is somewhat reminiscent of rice pudding. Surprisingly, the intrinsic flavour of rice hardly disturbs the cappuccino with the Yirga Santos espresso. In a cappuccino, rice milk has a very pleasant flavour that is more reminiscent of a light latte. Rice milk is also increasingly found in flavours such as vanilla or chocolate - or mixed with almond milk or soya milk.

Nut

	Almond	Cashew	Hazelnut	Coconut	Rice-almond
Flavour	Slightly acidic	Strong flavour	Pleasantly sweet, but with a distinct flavour	Subtle flavour	Tastes of rice, but pleasant natural sweetness
Milk foam	Very creamy	Difficult, collapses quickly	Difficult, collapses quickly	All right, a little watery	Difficult, collapses quickly
Cappuccino	Strong acidic note	The espresso flavour is overwhelmed	Harmonises well with espresso	Harmonises well with espresso	Harmonises well with espresso

Almond milk

Almond milk is a plant-based drink made from almonds and water. To make almond milk, freshly ground roasted almonds are poured over warm to hot water and left to infuse for several hours. Almonds are an alkaline food - the kernels are therefore ideal for a healthy and alkaline diet. The frothed almond milk is particularly creamy, has a slight almond flavour and tastes slightly sour. The tartness becomes even more pronounced in a cappuccino.

Cashew milk

Cashew milk consists only of cashew nuts and water. It is high in fat and low in carbohydrates. The flavour of the milk is very dominant and rather unsuitable for many espressos. Cashew milk does not cut a good figure when frothing milk either. The foam collapses quickly and the watery mass immediately begins to separate. Unfortunately, the combination of cashew milk and espresso is not convincing in terms of flavour.

Hazelnut milk

Hazelnut milk tastes just as you would imagine: It has an authentic, strong hazelnut flavour and the hazelnut aromas go very well with the Yirga Santos espresso we tested. The foam quality, on the other hand, is rather poor: the liquid and foam separate quickly. Like cashew milk, hazelnut milk is also high in fat and low in carbohydrates. Unlike cereal milks, nut milks have no natural sweetness. For this reason, sugar is often added to it, which you should be aware of when buying it.

Coconut milk

Coconut milk is made by pureeing the fruit flesh with water and then pressing this mixture through a cloth. The result is a flavoured, milky liquid with a fat content of around 15-25%, depending on the amount of water used. The fibrous mass that remains in the cloth is extracted again with boiling water and squeezed out - the second time a watery coconut milk is produced. For this reason, the fat and water content are separated in the packaging. Coconut milk should therefore be shaken well before use. Due to its high content of medium-chain fatty acids, coconut milk is utilised by the body as a quick source of energy. Contrary to our expectations, coconut milk is rather odourless. The milk is difficult to froth and the resulting fine-pored foam quickly. The frothed milk has a subtle coconut flavour and gives the cappuccino a pleasant freshness. Compared to soya milk, the coconut milk in the cappuccino tastes less watery.

Rice almond milk

Rice almond milk is one of the increasingly popular milk alternatives. This blend combines the natural sweetness of rice milk with the delicate nutty flavour of almond milk, while softening the strong rice flavour. The whole is very harmonious. In our comparison, however, the rice-almond milk is the one with the most carbohydrates. The foam is acceptable, though slightly watery. However, the foam still has a nice, fine consistency. The typical almond flavour only comes when the milk is frothed. The milk is excellent in a cappuccino. The chocolaty flavours of the Yirga Santos espresso are supported by the almond aroma and the sweetness of the rice milk.

Pulses & seeds

	Soya	Peas	Lupins	Hemp
Flavour	Earthy, light cereal flavour, mild sweetness	Natural sweetness	Neutral, reminiscent of cow's milk	Strong flavour
Milk foam	Foams only moderately	Creamy, hardens quickly	Creamy, hardens quickly	Foams well, but quickly becomes watery
Cappuccino	Watery, espresso goes under in flavour	Harmonises well with espresso, very sweet	Somewhat bitter	Earthy flavour, milk quickly separates from the coffee

Soya milk

Soya milk is a plant-based drink made from soya beans. Soya is rich in fibre, consists of 36% protein and is therefore a very good source of protein. The content of carbohydrates (approx. 2 grams) and fats (approx. 2.2 grams) is lower than that of cow's milk (4.8 grams carbohydrates / 3.5 grams fat). Compared to cow's milk, however, soya milk contains less vitamin B2 as well as calcium. Soya milk

smells earthy, tastes slightly of cereals and has a pleasantly mild sweetness due to the production process. Despite its high protein content, soya milk foams only moderately well. In a cappuccino, the taste of soya milk is almost lost - the cappuccino becomes watery and very little flavour.

Pea milk

Pea milk consists of pea proteins obtained from yellow split peas, water and a little rapeseed and sunflower oil. It is naturally vegan, lactose-, gluten- and allergen-free and fits well into a health-conscious diet thanks to its naturally high protein content. The drink doesn't taste like peas at all. Rather, the slightly yellowish milk stands out with its sweet flavour and comes close to cow's milk. The foam is creamy, but unsuitable for latte art as it becomes very firm after a short time. In a cappuccino, the sweetness of the milk foam in combination with Karibu coffee is reminiscent of hot chocolate. If you are not a fan of sweetness, you should make sure you buy the unsweetened version.

Lupin milk

The sweet lupin is on the rise. Thanks to its high vitamin and protein content, the lupin has an ecological and health advantage over many milk alternatives and does not require any genetic engineering. Cultivation is uncomplicated and the plant can grow without any problems even under difficult weather conditions such as frost and heat, which makes it interesting with regard to future challenges in agriculture. All in all, this makes sweet lupins a serious substitute for soya. The flavour of the milk is rather neutral, with a slight aftertaste reminiscent of cow's milk. The frothed milk is creamy and solidifies after a while. In the cappuccino, the coffee tastes a little bitter with the lupin milk, which doesn't convince us in terms of flavour.

Hemp milk

Although the hemp plant is one of the oldest useful plants on earth, hemp products have only recently appeared on a few supermarket shelves. Finely ground and mixed with water, hemp milk is made from the nutrient-rich seeds of the plant. A little salt and rice syrup or tapioca starch are useful to thicken and sweeten. The plant-based milk substitute is naturally lactose- and cholesterol-free and contains a high proportion of omega-3 fatty acids. The hemp drink was not convincing when it came to frothing milk. Foaming is not a problem, but the result quickly becomes watery and after a short time the milk separates almost completely from the coffee. The typical hemp flavour disappears from the cappuccino and becomes slightly earthy. As there are not yet many suppliers and hemp milk is rather difficult to find, it is worth experimenting and mixing the drink yourself.

Further information

What do I need to consider when frothing?

As plant-based milk heats up more quickly than cow's milk, it is easier the milk to overheat during frothing and become bubbly, making latte art impossible. A temperature of 55-60°C is therefore essential for the ideal frothing quality. For comparison: cow's milk should not be heated above 65°C (due to flavour and digestibility). However, not all plant milks are suitable for frothing. With cow's milk, the protein and fat content are decisive for the frothing result. The same applies to milk alternatives: the higher the protein and fat content, the better the milk foams.

Barista editions

The foam kings among the milk alternatives are the barista editions, which offer higher foamability and also an improved flavour thanks to the addition of proteins and fats. Three of these varieties are particularly convincing, as they not only manage to produce the perfect foam, but above all, the coffee flavour is not lost.

The Oat Barista probably appeals to most tastes, and not without reason. It foams beautifully and blends smoothly with coffee. The usually strong flavour of oats is not as prominent in the Barista edition.

Compared to oat milk, the Pea Barista Edition has a slightly firmer foam. The foam remains velvety and creamy for longer and is slightly more neutral in flavour than the Oat Barista.

As an exotic highlight, we also tested the coconut barista milk, which is absolutely convincing in terms of foaminess and creaminess thanks to its very high fat content. However, it may not be for everyone, especially in coffee, as it has a very strong flavour of its own.

When the milk curdles

Perhaps you have already experienced it. You're full of anticipation as you pour the milk into your coffee and then this happens: the milk curdles and the coffee no longer looks really enjoyable. But why is that? Let's get one thing straight: it's not the plant milk that's responsible for the unattractive appearance. Rather, it is due to the tannins in the coffee, which vary depending on the coffee variety and degree of roast. The more acid the coffee contains, the more this acid reacts with the soya protein in the milk. The protein coagulates and the white flakes appear in your coffee. To prevent this, it is advisable to enjoy the coffee immediately after brewing, as the longer it is kept warm, the more acid it produces. Flakes can also be avoided by using barista milk, as its higher fat content means that it is more resistant to acidity. Alternatively, we recommend using a coffee with low acidity.

How sustainable are milk alternatives?

It all depends. Not every vegan milk automatically has a good environmental footprint. The extent of the environmental impact depends on how the crops are cultivated and processed and processing of the product. However, it is difficult to measure the exact impact because, in addition to water consumption and CO2 emissions, factors such as genetic engineering, rainforest deforestation and the use

of pesticides must also be taken into account. This makes a comprehensive comparison very complex. However, it is known that the cultivation of rice, cashews or almonds requires large amounts of water. In addition, the products usually have to be imported, which further increases the ecological footprint. In comparison, oats, spelt and lupins require little acreage with a high harvest yield and score points due to their locality. As a guide, if you want to be both vegan and environmentally friendly, you should look for local cultivation and low water consumption when choosing a milk alternative.