

To pasteurise or not to pasteurise?

By Claudia Parmis

Pasteurised and unpasteurised juices may look the same, yet there is a big difference! Pasteurisation is a heating process which kills any bacteria or other microorganisms that may spoil or otherwise contaminate your food product. Let's find out how that works!

What is pasteurisation?

Pasteurisation is a heat-treatment process in the food industry that destroys harmful enzymes that cause food spoilage *without* changing the food too much.¹ In other words, pasteurisation is a method used to prolong the shelf-life of food products.

The process is named after the inventor Louis Pasteur. In the 1860s he demonstrated that an abnormal fermentation of wine or beer could be prevented by heating beverages to 57°C for a few minutes.² And so pasteurisation was invented!

Why do we need it?

In general, pasteurisation is used to prolong shelf life and remove harmful bacteria for the consumer making the food product safe to eat or drink.

Let's look at the example of juices and smoothies. When fruit and veggies are turned into a fresh blend, harmful bacteria may be present in the finished product. When applying pasteurisation on your beverage, these harmful enzymes will be killed.³

Thermal processing is still the most cost-effective tool to ensure the quality and safety of the food product.⁴ There are a few forms of thermal processing, but pasteurisation is the most commonly used method in the processing of juices and smoothies.

Pasteurisation of juices and smoothies is also done to maintain the properties that make the beverage attractive and enjoyable to consumers. Think about taste, color and texture.

How does pasteurisation work?

In theory, it's easy. You can even do it yourself.

When juices and smoothies are pasteurised, they are boiled to just below 100°C. When you apply this process, it's very important to make sure the container in which you boil the juice is spick and span - otherwise, you'll just recontaminate it. When you're done, make sure you pour the beverage into sterilized containers for consumption.

For bulk production, your juice is actually pasteurized twice.

It turns out juices and smoothies are often pasteurised twice before reaching the consumer.⁵ The goal is to increase the shelf life of the product even more.

The primary pasteurisation is performed as soon as possible after juice extraction and before bulk storage. It is usually done at 95-98°C for 10-30 seconds. Here, the objective is to inactivate the harmful enzymes and microorganisms in the fruits.

The secondary pasteurisation is done just before packaging. The temperature applied during this stage is 95°C for 15 seconds. Here, the objective is to kill any microorganisms that may have contaminated the juice after the first pasteurisation process.

What is the impact of heat treatment on food products?

Juices and smoothies are considered an important source of vitamins to most of us. Let's take orange juice, a good source of Vitamin C, as an example. Vitamin C is a nutrient that decreases over storage time due to oxidation and non-oxidative reactions. This decrease determines the shelf life of the product.

It was long thought that pasteurisation destroys Vitamin C during the heat treatment. The reason this is believed is that Vitamin C degrades faster as temperature increases. But this is not true in this case! The time during which the orange juice is heated is very short and therefore the impact on vitamin C levels is negligible.⁶

Nevertheless, others say that, in milk for example, vitamins A, B12, C and D are reduced when pasteurisation is applied.

In the end, scientists and food producers remain divided on this subject.

So, is pasteurisation essential for high quality smoothies and juices?

No, it's not. The heat treatment decreases the chance of contamination and increases shelf life. If pasteurisation decreases nutrients, it will be in a not too significant way and chances of a safe food product will be higher. If you don't like consuming processed foods, it's good to know that pasteurised juices and smoothies sold on the market are also safe to consume.

Would you prefer your juices and smoothies pasteurized or as natural as possible?

- (1) "Pasteurization." Britannica. Accessed 21 November 2019.
(<https://www.britannica.com/technology/pasteurization>)
- (2) "Pasteurization." Britannica. Accessed 21 November 2019.
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- (4) Petruzzi et al. (2017) "Thermal Treatments for Fruit and Vegetable Juices and Beverages: A Literature Overview" Accessed 21 November 2019.
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- (5) "Beyond safety: Why we pasteurize fruit drinks." Tetrapak. Accessed 21 November 2019.
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- (6) "Beyond safety: Why we pasteurize fruit drinks." Tetrapak. Accessed 21 November 2019.
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