International Food & Meat Topics

Foodsafety BYTES

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Number: 14

High-pressure processing II

Advantages of using High Pressure Processing (HPP)

One of the main benefits of HPP is it preserves the freshness and flavour of food products without compromising their nutritional value and organoleptic properties. HPP improves food safety and extends shelf life, and destroys pathogens such as Salmonella, E.coli, Listeria, Vibrio and norovirus, and spoilage microorganisms such as lactic acid bacteria and coliforms. HPP also allows us to reduce the use of chemical additives and preservatives.

It can be used for a wide variety of food products including juices, meat products, ready-to-eat meals, dairy products and seafood products, and can be applied on packaged products or directly on bulk liquids.

Disadvantages of using HPP

HPP does have some drawbacks that limit its applicability with some food products. HPP isn't effective against all microbial forms, especially spores, viruses, and moulds. Spore-forming organisms are extremely resistant to HPP when they are in their spore form. These spores need a combination of pressure and heat, or another antibacterial intervention in order to rid them. Therefore, HPP cannot replace thermal pasteurisation for some foods, and may require additional treatments or packaging methods to ensure food safety.

HPP can also cause undesirable sensory changes in certain food products. Very high pressures can damage the appearance of delicate foods such as leafy greens and strawberries, and protein-rich foods like eggs. However, HPP technology is progressing all of the time and food scientists will continue to try and improve the HPP process to accommodate delicate and protein-rich foods. And even though not all food products can be processed using HPP, it is a good example of how technology can deliver safe and high quality food products.

Alternatives to HPP

There are other non-thermal pasteurisation methods available for food processing and there are other technologies that use physical or chemical agents to reduce microbial load and extend shelf life, these include PEF, ultraviolet light, ultrasound, cold plasma and HPCD. These methods have different advantages and disadvantages.