IMPACT OF NON-THERMALPROCESSING TECHNOLOGIES ON QUALITY OF SOME FRUIT JUICES

Fatma Coskun[1*], Fikret Pazır[1]
[1]Food Engineering Department, Faculty of Engineering, Ege University, 35100 Bornova/Izmir, Turkey
[*]e-mail: fatmacoskun_21@hotmail.com

Abstract

Non-thermal processing technologies include the application of: High voltage pulsed electric fields (PEF), High hydrostatic pressure (HHP), Ultraviolet light (UV), High intensity light pulses (HILP). Conventional thermal processing of fruit juices remains the most widely adopted technology for shelf life extension and preservation of fruit juice. However, consumers demand for nutritious foods, which are minimally and naturally processed, has led to interest in non-thermal technologies. In fruit juice industry, high hydrostatic pressure processing (HHP) or high pressure processing (HPP) is a non-thermal food preservation technique for microbial and enzyme inactivation with reduced effects on nutritional and quality parameters when compared to thermal treatments. The other non-thermal technology is UV technology. The inactivation mechanism of UV is the formation of photoproducts in the DNA. High intensity pulse electric field (PEF) is one of the non-thermal technology that is used in fruit juice industry. PEF treatment involves short treatment times to inactive microorganisms at temperatures below those adversely affecting the food quality. Ultrasound processing of juices is reported to have minimal effect on the degradation of key quality parameters such as color and ascorbic acid in orange juice during storage at 10 ^{0}C. This positive effect of ultrasound is assumed to be due to the effective removal of occluded oxygen from the juice.

In conclusion, resistance of some microorganisms and enzymes such as polyhpenol oxidase (PPO) and b -glucosidases towards non thermal preservation technologies has limited the application of such technologies as an alternative to heat treatment. The combination of various non thermal technologies on fruit juice has been shown to be more effective for inactivating resistant microbes and enzymes.

***Key words**: Anthocyanins, Fruit juice, Quality of fruit juice, Non thermal processing, Thermal technologies.*