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High pressure processing and pulsed electrical field strategies on shelf life quality and bioactives in fruit juices and functional soft drinks

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Abstract

High pressure (HP) and Pulsed electrical field (PEF) processing are non-thermal techniques of foods has been revealed as useful tools to extend their shelf-life and quality, they're novel food preservation technique for microbial and enzyme inactivation and as well as to preserve their nutritional and functional characteristics and bioactive components in comparison with those of traditional thermal processing results. The impact of thermal, HP and PEF processing for mild pasteurization of fruit juices were compared on a fair basis, using processing conditions leading to an equivalent degree of microbial inactivation. The properties of widely common citrus juices including 100% orange, grapefruit, tangerine and apple juices, berry juices including cranberry, gojiberry, acaiberry, blackberry, raspberry juices, apricot, peach and grape juices and new developed functional soft drinks were examined by measuring the possible changes in the physical-chemical microbiological parameters (pH, Brix°, electric conductivity, colour), aroma, acidity and majorly bioactive phenolics. The optimum applying technologies compared was PEF treatment with the parameters of 28 kV/cm with 50 pulses; HHP technology with the parameter of 600 MPa pressure for 10 min treatment time. For pectin methylesterase, peroxidase inactivation and bitter compounds, ascorbic acid, carotenoid profile, furfural and 5-hydroxymethylfurfural, and all other quality parameters were scrutinized. High ascorbic acid retention and high antocyanins (cyanidin, pelargonidin and their glycoside derivatives), petunidin, peonidin, malvidin glycosides were observed in HHP treated beverages following PEF. HHP and PEF processing could be feasible technologies to attain beverages with fruit juices and functional drinks with high vitamin content and antioxidant potential.

Biography

Tokusoglu has completed her Ph.D at Ege University Engineering Faculty, Dept of Food Engineering at 2001. She is currently working Associate Professor in Celal Bayar University-Engineering Faculty- Department of Food Engineering. Tokusoglu performed a visiting professor at the Food Science and Nutrition Department/ University of Florida, Gainesville-Florida-USA during 1999-2000 and at the School of Food Science, Washington State University, Pullman, Washington, USA during April-May 2010. She organized and directed as Conference Chair the International Congree entitled ANPFT2012 (Advanced Non-thermal Processing in Food Technology: Effects on Quality and Shelf-Life of Food and Beverages in May, 2012 at Kusadasi-Aegean, Turkey (www.anpft2012.org). She has published many papers in peer reviewed journals and serving as an editorial board member of *International Journal of Food Science and Technology* (IJFST) by Wiley,USA. Tokusoglu published the scientific edited book entitled Fruit and Cereal Bioactives: Chemistry, Sources and Applications by CRC-Press, Taylor & Francis, USA Publisher, other new one entitled Improved Food Quality with Novel Food Processing is also in press by CRC Press.