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Thermo sonication as a potential quality enhancement technique of apple juice

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Abstract

Enzymatic browning and microbial growth lead to quality losses in apple products. Fresh apple juice was thermosonicated using ultrasound in-bath (25 KHz, 30 min) and ultrasound with-probe sonicator (20 KHz, 5 and 10 min) at 20, 40 and 60 ℃ with 70% amplitude for inactivation of enzymes (polyphenolase, peroxidase and pectinmethylesterase) and microflora (total plate count, yeast and mold). Additionally, ascorbic acid, total phenolics, flavonoids, flavonols, pH, titratable acidity, °Brix and color values influenced by thermosonication were investigated. The highest inactivation of enzymes was obtained in ultrasound with-probe at 60 ℃ for 10 min. The microbial population was completely inactivated at 60 ℃. The retention of ascorbic acid, total phenolics, flavonoids and flavonols were significantly higher in ultrasound with-probe than ultrasound in-bath at 60 ℃. These results indicated the usefulness of thermosonication for apple juice processing at low temperature, for enhanced inactivation of enzymes and microorganisms.

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