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Kinetics and Effects of Ultrasonication on Physiochemical, Microbial and Sensory Properties of Grape Juice during storage periods

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Abstract : The present work is aimed to study the kinetics and effects of ultrasonication on physiochemical, microbial and sensory properties of grape juice during storage periods of 90 days. The main objective of the present work is to increase the shelf life of the grape juice but without adding any chemical preservative. The grape juice was ultrasonicated at room temperature at various time intervals of 5,10,15,20 and 30 minutes to determine the pH, TSS, Titratable acidity, Ascorbic acid, Reducing sugar, Microbial load, and Sensory Properties during storage periods. It was observed that the optimum treatment for grape juice was 20 min ultrasonicated sample for 15 days and it had pH of 3.9, TSS of 17.6ºBrix, Titratable acidity of 0.84 (g/100ml), reducing sugar of 10.3 (µg/ml), ascorbic acid of 2.65 (mg/100g) microbial load of 10 (CFU/ml), and sensory score of 9. According to FDA, 5 log reductions in microbial load were attained 20 and 30 min ultrasonicated juice samples. The shelf life of grape juice was increased upto 15 days. The results suggest that ultrasound treatment technology could be potentially employed for the processing of grape juice and could improve its quality and safety.
Key words : Ultrasonication, Grape juice, pH, Ascorbic acid, Reducing sugar.

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