Title Influence of blanching and low temperature preservation strategies on antioxidant activity and phytochemical content of carrots, green beans and broccoli

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Citation LWT - Food Science and Technology, Volume 44, Issue 1, January 2011, Pages 299-306

Keywords Ascorbic acid; Phenols; Kinetics; Blanching; Freezing; Chill storage

Abstract

The objective of this study was to investigate the effect of blast freezing and blanching in combination followed by chilling, on the antioxidant activity (ARP), phenols, ascorbic acid and colour of broccoli, carrots and green beans. No significant changes ($p > 0.05$) in ARP of blanched frozen (BLFR) broccoli, carrot and green beans were observed. In contrast, UBFR (unblanched frozen) treatments caused a significant decrease ($p < 0.05$) in ARP and ascorbic acid content of vegetable samples. BLFR treated samples had better retention of antioxidant activity and ascorbic acid as compared to UBLR counterparts at chill storage (4 °C) for 7 days. However, no significant changes were observed in phenol content for all vegetables. Ascorbic acid decreased exponentially for both blanched and unblanched samples. The reaction rate constant (k) increased from 1.06×10^{-1} day^{-1} to 1.17×10^{-1} day^{-1} for blanched and unblanched broccoli florets and from 4.6×10^{-3} day^{-1} to 1.98×10^{-1} day^{-1} for blanched and unblanched carrots during 7 days storage. Result presented here indicates greater stability of nutritional parameters for BLFR samples compared to UBFR samples during 7 days storage at 4 °C for all vegetables.