Post Harvest Treatment Effects on Crown-Cut Broccoli Shelf life

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Thesis submitted to the Faculty of the Virginia Polytechnic Institute and State University in partial fulfillment of the requirements for the degree of

Master of Science
in
Food Science and Technology

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Keywords: Broccoli, Shelf life, Shrink wrap packaging, Ascorbic acid, Glucosinolates, Texture, Color

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ABSTRACT

The effects of packaging treatments, post harvest cooling delay and storage duration on color, texture, ascorbic acid content, weight loss and glucosinolate retention in crown-cut heads of broccoli were studied. Oxygen and CO$_2$ levels inside shrink wrap packages were also monitored. Shrink wrap packaging had a significant positive effect on hue angle ($p \leq 0.05$). Packaging and post harvest cooling delay had no effect on hue difference ($\Delta H$) and total color difference ($\Delta E$). While post harvest cooling delay had no effect on texture, crown-cut heads of broccoli stored in shrink wrap packaging retained firmness significantly better than ice packaged heads of broccoli ($p \leq 0.05$). Ascorbic acid was retained better in broccoli held in shrink wrap packages and cooling delay had a significant negative influence on ascorbic acid content ($p \leq 0.05$). Packaging and post harvest cooling delay had a significant positive effect on weight loss ($p \leq 0.05$). Broccoli stored in shrink wrap film lost about 3.7% of original weight while ice packaging resulted in about 17.4% weight loss ($p \leq 0.05$). No consistent trends were observed in the levels of O$_2$ and CO$_2$ inside shrink wrap packages. An important glucosinolate, glucoraphanin was retained significantly better in shrink wrapped heads ($p \leq 0.05$). Between two cultivars, shelf life of cv.Gypsy was better than cv.Everest with respect to color, ascorbic acid retention and weight loss. But cv.Everest retained texture (firmness) better after 35 days of storage. Overall results indicate that shrink wrap packaging and shorter post harvest cooling delays protect quality of broccoli.
Acknowledgements

There is one person above all others who deserve my deepest thanks and respect; he gave me the opportunity to jump in to food science and readily accepted to advise my research work; he fostered a stress-free working relationship which was crucial to the completion of this work, my advisor Dr. Joe Marcy. I am grateful to him for supportive supervision.

I am thankful to my committee members Dr. Tony Bratsch and Dr. Rob Williams for their support and encouragement.

I want to thank Harriet Williams for the thought provoking conversations we have had and her support and advice throughout my research. I owe a great deal to her. I am thankful for the assistance and advice i received from Dr. Hengjian Wang. I owe a special note of gratitude to John Chandler for assisting me with miscellaneous tasks.

I wish to express my warmest thanks to all my faithful friends.

I acknowledge and return love of my mom; she believed in me all these years no matter what I have chosen to do and my dad for giving me his vision of life and my sense of self.

Finally, I am thankful to the Almighty for his grace.
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