Evaluation of the Effect of UV treatment on Shelf Life and Physicochemical Properties of Coconut Water as an Alternative to Thermal Pasteurization

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Coconut (*Cocos nucifera L.*) is an important tropical crop and coconut water has a unique chemical composition. Coconut water loses its delicate flavor and important nutrients when heated during commercial processing. Therefore, this study was conducted to identify the effectiveness of ultraviolet treatment to prolong the shelf-life of coconut water and to compare ultraviolet and thermal pasteurization (85^0C for 10 min) on the sensory and physicochemical properties of coconut water.Coconut water taken from fresh coconuts was subjected to UV dose of 33 kJL^{-1} using the lab-scale UV pasteurization unit equipped with UV-C germicidal lamp (253.7nm). Brix, p^H,and titratable acidity of fresh, UV and heat pasteurized coconut water were measured at the beginning and throughout refrigerated storage (4^0C for 4weeks). The flavor profiles of coconut water samples were analyzed using solid phase micro extraction method. Vitamin-C content was analyzed using direct titration with iodine and sensory quality is evaluated using semi-trained assessors. The results showed that the ultraviolet treatment did not significantly change the p^H of 5.72, brix of 4.87 and the titratable acidity of 0.08% of the fresh coconut water sample. Ascorbic acid loss in heat and UV treated samples were 57.06% and 25.29% respectively. The UV treated coconut water product was microbiologically safe within 3 weeks of storage period at 4^0C temperature. Flavor profiles showed higher volatile flavor retention in UV treated sample than heat treated sample. Sensory panel showed that UV treated sample was liked as much as fresh sample, whereas heat pasteurized sample was significantly less liked. This study showed that the quality of UV treated sample was better than heat pasteurized coconut water sample.

Keywords: *Coconut Water; Flavor Analysis; Heat Treatment; UV Treatment*