

Maturation and Quality Properties of Fresh Watermelon (*Citrullus lanatus*) Juice

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Abstract

There is an increase in the consumption of natural fruit juice as an alternative to traditional caffeine-containing beverages such as coffee, tea or carbonated soft drink. Watermelon (*Citrullus lanatus*) juice is a nutritional beverage containing essential minerals and amino acids. Besides, it contains lycopene, ascorbic acid, β -carotene and polyphenols as antioxidants against inflammation, and certain cancers. However, the quality properties of watermelon juice undergo some chemical changes during the maturity stages. As a result, monitoring these quality properties during maturity is becoming very important. Three watermelons per row were manually and randomly picked at different stages of maturity. The flesh was put in the table juice extractor to extract the watermelon fruit juice. Analysis of antioxidants (lycopene, β -carotene, ascorbic acid and total polyphenolic content) was done using the HPLC with NH₂ Spherisorb. A carotenoid C30 reversed-phase column with a UV detector at absorbance 450 nm for β -carotene and 475 nm for lycopene 254 nm for ascorbic acid. The absorbance of supernatant for total polyphenolic acid was measured at 750 nm using a UV-VIS spectrophotometer. A significant ($p < 0.05$) increase in lycopene content was observed until it reached 6.19 mg/100 g at a fully-ripe stage. No β -carotene was detected at the unripe stage. However, a significant increase was observed as maturity transitioned to half-ripe (0.12 mg/100 g) and reached 0.23 mg/100 g at the fully-ripe stage. A similar trend was observed for ascorbic acid, it was 1.3 mg/100 g at the unripe stage, the lycopene content was 0.04 mg/100 g but increased as maturity unripe stage but significantly ($p < 0.05$) increased with maturity until it reached 3.47 mg/100 g at the fully-ripe stage. A significant increase in total polyphenol was observed; 4.87 mgGAE/100 at the unripe stage and reached 25.95 mgGAE/100 at the fully-ripe stage. The quality properties of the watermelon juice are dependent on the maturity stage. Watermelon juice should be consumed at the fully ripe stage as it contains more quality properties than at any stage.