Ultrasound Treatment as an Alternative Method for Ripening of *Seeni* Banana and *Embul* Banana (*Musa spp.).*

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The aim of this study was to investigate the effect of ultrasound as pre-treatments on the physiochemical characteristics of the *Seeni* and *Embul* banana varieties in Sri Lanka. Ultrasound treatment of 25 kHz frequency was applied to physiologically matured, freshly harvested *Seeni* and *Embul* banana fruits for different time periods (0, 10, 20, and 30 min). The ultrasound-treated samples were stored for 4 days at room temperature (28 °C). The changes in firmness (N), °Brix, pH, titratable acidity (TA%), peel color, weight reduction (%), carbon dioxide (CO_2) production rate (ml kg^{-1} h^{-1}), antioxidant activity (DPPH radical scavenging activity %) and the light microscopy study of tissue damage of both banana samples were investigated. The pulp firmness of the banana samples significantly decreased ($P<0.05$) with the time of ultrasound treatment of both banana varieties. The CO_2 production rate, °Brix, and weight reduction percentage of both varieties were significantly increased ($P<0.05$) with the period of ultrasound treatment. At 30 min of ultrasound treatment time, the antioxidant activity of the *Seeni* and *Embul* bananas increased from 12.05 ± 1.94% to 57.72 ± 3.88%, and 78.52 ± 3.22% to 95.36 ± 0.96% respectively. The peel lightness (L), redness (a), and yellowness (b) values and the pH reduction of the *Embul* banana sample did not significantly vary ($P>0.05$) with the ultrasound time. However, the "b" value of the *Seeni* banana samples significantly increased ($P<0.05$) with the ultrasound treatments. Microscopic study showed that the ultrasound treatment time directly affected the microchannel formation and cell damage of both varieties. Moreover, ultrasound treatment effect on the peel discoloration of the *Embul* banana variety was identified as undesirable postharvest quality characteristics. The results of this study suggested that the ultrasound treatment may provide an alternative method to enhance the ripening rate and maintain the proper postharvest quality of and *Seeni* banana varieties.

Keywords: Antioxidant, Banana, Physiochemical properties, Respiration, Ultrasound

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