

**QUALITY EVALUATION OF *Caryota urens* (KITUL)
PALM TREACLE**

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ABSTRACT

Though *Kitul* based production is an important venture in Sri Lankan society, it is crucial to get quality products with inherent health benefits, because farmers tend to deteriorate quality of the product by adulteration with sugar and other adulterants in order to achieve higher commercial benefits. The study was aimed to evaluate the sensory, physicochemical and spectroscopic characteristics of unadulterated and adulterated *Kitul* treacle obtained from six commercial suppliers in Badulla district. Measurements were taken from six original samples (1-6) and a 7th sample which was processed by mixing original samples. A Friedman sensory test was performed for 1-6 samples and Sample 1 was identified as the highest ranked sample, as it has the lowest estimated median value for overall quality of the samples where the extremely liked sample is scaled as 1. When considering the physicochemical parameters, all treacle samples were acidic with pH values ranging from 5.38 to 6.52. The analytically obtained total acidity values of the samples were ranging between 13.66 mEq/kg and 33.66 mEq/kg. The highest brix value (74.93 °Brix) was obtained for the sample 7, which is the composite product of 1-6 samples. Potential alcohol as volume percentages were ranged between 50.66 %V/V to 56.90 %V/V (Potential alcohol %V/V = g L^{-1} of Sugar / 16.83). Water activities were ranging between 0.76 and 0.82 and moisture percentages of the samples were ranging from 14.36% to 21.86%. The Chroma meter values were within the yellowness range (+b). The values were significant for these parameters except for the brix value where regression p value was 0.245. Fourier Transform Spectrophotometer (FTIR) data were obtained within a 500-4000 cm^{-1} range. Spectral data were obtained by adulteration of 1-7 samples with six different adulterants which are Cane sugar syrup, Inverted sugar syrup, Coconut treacle and 100% solutions of Cane sugar, Sucrose and Glucose. The greatest intensity of the bands was at a level of 3265 cm^{-1} . In conclusion, sensory physicochemical and spectroscopic characteristics of selected samples were changed depending on the supplier. Thus, sensory, physicochemical and spectral measurements were effective in differentiating and evaluating the quality of the *Kitul* treacle samples.

Keywords: *Caryota urens*; Kitul; FTIR Spectroscopy; Physicochemical characteristics; Quality evaluation