

IDENTIFICATION OF OPTIMUM PRETREATMENT AND STORAGE CONDITIONS ON ENHANCING THE KEEPING QUALITY OF MINIMALLY PROCESSED *MUKUNUWENNA* (*Alternanthera sessilis*)

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Enhancing the keeping quality (KQ) of minimally processed leafy vegetables, such as *Mukunuwenna* (*Alternanthera sessilis*), is challenging due to high perishability. The study aimed to extend the shelf life of minimally processed *Mukunuwenna* by evaluating four treatments: 0.5% citric acid (T₁), 0.5% citric acid with oxygen absorbent (T₂), 0.5% Garcinia solution (T₃), Garcinia solution with an oxygen absorbent (T₄), and a control (T_c), under two storage conditions: Refrigerated (4±0.1°C, RH 60±0.6%) and cold (13.1±0.2°C, RH 80.1±0.9%). Initially, tender stems and leaves were cut into 2 mm pieces, and immersed in 0.5% citric acid or Garcinia powder solution for one minute and packed in LDPE (150 gauge). The best treatments were initially screened by measuring color changes and ascorbic acid retention over 15 days of storage. T₁ and T₃ stored under refrigerated conditions were selected due to no significant color changes ($p>0.05$) and higher ascorbic acid retention (1.33±0.29 mg g⁻¹ and 1.17±0.29 mg g⁻¹ respectively). The KQ of T₁ and T₃ was further evaluated for total plate count (TPC), yeast and mold count (YMC), moisture content, physiological weight loss, Total Soluble Solids (TSS), pH, and sensory evaluation. Results showed TPC and YMC, remained within critical limits (1×10⁶ CFU g⁻¹, and 1×10⁴ CFU g⁻¹, respectively) up to 10 days in T₁ and T₃ treatments with no significant differences ($p>0.05$) in moisture contents (87.83±0.25% and 87.92±0.04%, respectively). Although pH values for T₁ (5.48±0.01) and T₃ (5.62±0.01) showed a significant increase, T₃ indicated no significant change ($p<0.05$) in weight loss (1.36±0.21%) or TSS (4.37±0.06°Brix). Additionally, T₃ showed the lowest decay percentage (0.45±0.03%) and achieved the highest sensory acceptability after 10 days. In conclusion, treating minimally processed *Mukunuwenna* with Garcinia solution and storing it under refrigerated conditions can effectively extend its shelf life to 10 days while maintaining its quality.

Keywords: Cold storage, Minimally processed *Mukunuwenna*, Refrigerated condition