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Effects of Water Soaking Time on Quality and Chemical Composition of Fresh Sticks of Ceylon Cinnamon (*Cinnamomum zeylanicum* Blume)

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Abstract

Ceylon cinnamon (*Cinnamomum zeylanicum* Blume) is a miracle spice exported from Sri Lanka and its quality plays a major role in market growth and retention. Sri Lanka, despite its competitive edge over Ceylon cinnamon, has struggled to capitalize on this due to poor food safety and quality management systems. Sri Lanka's cinnamon farming and processing methods are suboptimal, leading to poor quality. A certification-level factory concept is proposed to address this issue. Fresh cinnamon sticks are collected from rural areas and transported to central factories, resulting in high transportation costs. Therefore, the sticks are collected and stored in tanks underwater for more than one day. Government authorities recommend processing the sticks on the same day of harvesting, albeit there is a lack of scientific evidence to support this requirement. The current study aims to identify potential quality and chemical composition variations from different water storage durations of fresh cinnamon sticks. Eight samples were analyzed: an initial sample (control) with no soaking and seven samples soaked for varying durations, from 1 to 7 days. The comprehensive approach encompasses determining moisture content, oil content, yeast and mold content, water activity, color variation, chemical analysis of oil samples by GC-MS, and the evaluation of the peelability of cinnamon bark. The research aims to provide valuable insights into optimizing post-harvest handling techniques to improve the quality of cinnamon. Most quality parameters, including moisture content, volatile oil content, water activity, total ash, color values, and microbial counts were not significantly affected by soaking. Furthermore, the peelability of cinnamon bark was also unaffected by the length of soaking time. Though the cinnamaldehyde content in the oil has decreased, the exact change is difficult to interpret due to the semi-quantitative nature of the analysis. Moreover, an increase in 3-phenyl-2-propen-1-ol was also detected in GC-MS analysis. Further analysis and replication of the experiments are underway to establish sound recommendations based on chemical composition of cinnamon bark.

Keywords: *Ceylon cinnamon, Cinnamaldehyde, Quality management, Chemical composition, GC-MS analysis*