

EFFECT OF PRIMARY PACKAGING ON PRESERVING QUALITY OF CEYLON CINNAMON (*Cinnamomum zelanicum*) FEATHERINGS DURING STORAGE

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Cinnamon Featherings (CFs) are inner bark fragments used to extract cinnamon oil and oleoresin. Substantial quality degradations of export CFs have been reported due to the lack of appropriate primary packaging during storage. This study evaluated the effect of primary packaging on preserving the quality of CFs in the ambient storage ($29.2 \pm 1.3^\circ\text{C}$; RH $77.8 \pm 4.5\%$). In this study, two single-layered [polypropylene (PP), polyethylene (PE)], one metalized double laminated (MET-PET/LLDPE), and one metalized triple laminated (PET/MET-PET/LLDPE) packaging materials were utilized based on their moisture and oxygen barrier properties. A control sample without any packaging, was also included. Physicochemical properties, including color values (L^* , a^* , and b^*), water activity (a_w), moisture content, volatile oil content (VoC), insect count, and microbial counts [total plate (TP), yeast and mold (YM) count] were assessed every 21 days over 63 days. Organoleptic quality evaluation was also carried out at the end of 63 days. Results showed no significant difference in the moisture content of CFs stored in different packaging materials ($p > 0.05$). Further, the highest VoC showed in CFs in triple laminated packaging ($3.94 \pm 1.45\%$) while the least was in the control ($2.91 \pm 0.59\%$). Although moisture contents, VoC, and water activities of CFs packed with four packaging materials were found within the permissible limit of $<14\%$, $>1\%$, and <0.70 , respectively, along with the storage period, the control sample exceeded these limits significantly. TP and YM counts of the four packaging were also found in the acceptable range ($<1 \times 10^6$ and $<1 \times 10^4$ CFU g^{-1} , respectively). Regardless of control, the significantly highest ($p < 0.05$) retention of organoleptic quality was reported in CFs in triple-layered packaging. In conclusion, metalized triple laminated (PET/MET-PET/LLDPE) packaging is the best option for preserving the quality of CFs concerning the higher retention of VoC, organoleptic quality, moisture, and microbial safety.

Keywords: Moisture content, Polyethylene, Polypropylene, Triple laminated, Volatile oil content