

Oxidative stability parameters and sensory properties of in-shell "Stuart" pecans [*Carya illinoensis* (Wangenh.) K.Koch] stored at different temperatures under non-accelerated conditions

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Postharvest Biology and Technology, Volume 179, September 2021, 111591

Abstract

The main goal of the present work was to determine the oxidative stability of Stuart pecans stored at different temperatures throughout 300 days (approximately 10 months post-harvest). In-shell pecans were stored at 2 °C and 20 °C at 65 % relative humidity and the oxidative stability was evaluated at 60 days intervals. At 20 °C, lipid oxidation markers were significantly higher than at 2 °C. Kinetic of oxidation showed significant changes after 210 days of storage with hexanal and pentanal levels 10-fold higher at 20 °C than at 2 °C, leading to development of rancid and bitter taste with the significant loss of typical flavour and sweetness. Low storage temperature helped lower the levels of oxidative markers but did not avoid the rise of oxidation. Fatty acids and α -tocopherol did not change throughout storage, but γ -tocopherol showed a 12 % and 24 % decrease when pecans were stored for 300 days at 2 °C and 20 °C respectively. The Principal component analysis showed a clear correlation between hexanal and pentanal and the appearance of bitter and rancid taste in nuts along with the storage time. Aldehydes resulted in a suitable non-destructive marker of pecans stability and quality. Therefore, refrigeration of in-shell pecans reduced the oxidation and its sensory consequences.