Title Biochemical and textural ripeness assessment of avocado fruit from different origins

Author S. Landahl, M.D. Meyer and L.A. Terry

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Abstract

Stage of ripeness and quality of avocado is notoriously difficult to assess by conventional methods. Texture is a very important determinant of avocado fruit quality and can change radically during storage. The difficulties in determining avocado quality are related, in part, to the spatial heterogeneity of fruit characteristics during ripening. The aim of this study was to assess the discriminatory capabilities of physiochemical properties to determine ripeness of imported 'Hass' avocado fruit. Fruit were stored at 12°C and sampled at regular intervals. Using a previously unreported method, the texture of different slices from individual fruit was measured during ripening. Maximum load, elasticity and viscosity of fruit tissue were measured using a universal testing machine fitted with a 500N or 5N load cell. The same tissue slice was then further processed prior to subsequent quantification of non-structural carbohydrates (NSCs) and fatty acid methyl esters using standard high performance liquid chromatography coupled to evaporative light scattering detection and gas chromatography coupled to flame ionisation detection, respectively. Spatio-temporal differences in maximum load, elasticity, viscosity, NSCs and fatty acid composition were found in avocados from different origins. Results of measured texture and target analytes were used to differentiate avocado fruit into definable groups using partial least squares discriminant analysis.