Title Effect of maturity stage on the content of fatty acids and antioxidant activity of 'Hass' avocado

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Abstract

Avocado *(Persea americana)* is an important tropical fruit and a good source of lipophilic phytochemicals such as monounsaturated fatty acids, carotenoids, vitamin E and sterols that have been inversely related to cardiovascular diseases. However, their antioxidant capacities have received far less attention compared with hydrophilic phytochemicals in this fruit. In this context, this study evaluated the effect of the stage of ripeness of 'Hass' avocado on the content of lipophilic and hydrophilic phytochemicals and their correlation with the antioxidant capacity. In every ripeness stage the fatty acids, total phenolic and flavonoid content as well as the antioxidant capacity were evaluated. Physiological and physico-chemical analysis were also performed including respiration rate, ethylene production, firmness, color (L*, °Hue, and Chroma), dry matter and oil content. In general, total phenols increased during ripening, while flavonoids slightly decreased. The main fatty acid identified was oleic acid (about 67–70% of total content). In general, a significant increase in monounsaturated and saturated fatty acids was observed during avocado ripening while polyunsaturated fatty acid content decreased ($p < 0.05$). Lipophilic extracts showed higher values of antioxidant capacity than hydrophilic, however, both extracts had similar trends for DPPH, TEAC and ORAC assays. DPPH and TEAC assays had a positive correlation with some unsaturated fatty acids. Avocado at different ripeness stages showed a better antioxidant capacity in the lipophilic fraction, which correlated with the fatty acid content evaluated.