

Title Effects of cutting and maturity on antioxidant activity of fresh-cut tomatoes
Author M.M. Lana and L.M.M. Tijssens
Citation Food Chemistry Volume 97, Issue 2, July 2006, Pages 203-211
Keyword Minimally processed; Fresh-cut tomato; Radical scavenging capacity; Lipid peroxidation inhibition; *Lycopersicum esculentum*; Modelling

Abstract

To investigate the changes in total antioxidant activity of fresh-cut tomato during storage, tomato fruits harvested at three different stages of maturity were cut into 7-mm thick slices and stored at 5 °C. Intact fruits were stored in the same conditions as a control. The antioxidant activity was evaluated as the capacity to scavenge the radical $ABTS^{\bullet+}$ in both hydrophilic (HAA) and lipophilic (LAA) extracts. Cutting resulted in a decrease in the HAA compared to the control fruits and did not influence significantly the LAA. Changes in LAA during storage were described by a simple exponential model developing towards an asymptotic end value. The HAA also decreased exponentially in the beginning of the storage time but increased again afterwards. For both hydrophilic and lipophilic antioxidant activity the riper the fruit the higher was the antioxidant activity. Since no relevant interaction was found between time of storage and stage of maturity, the major factor determining the level of antioxidants in tomatoes seems to be the initial level of antioxidant activity at the moment of harvest. The levels of HAA did not differ significantly due to ripening during storage, while the LAA increased with ripening. These results indicate a potential effect of processing to decrease the antioxidant activity in vivo. This would represent a decrease in the value of cut tomatoes as a source of hydrophilic antioxidants in the diet compared with the fruit stored intact. In another experiment, realized at the same conditions, the total antioxidant activity was evaluated using a lipid peroxidation inhibition assay. Antioxidant activity could be measured in methanol extracts, but not in THF extracts. Aqueous extracts showed pro-oxidant activity. No effect of cutting or storage time was observed.