

Title Effects of processing on the antioxidant activity and phytochemical bioavailability in fruits and vegetables

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### **Abstract**

Processed fruits and vegetables have long been considered to have lower nutritional value than their fresh produce based on the loss of vitamin C during processing. Our research group found that the vitamin C in apples contributed less than 0.4% of the total antioxidant activity, indicating that most of the activity comes from the natural combination of phytochemicals. This suggests that some processed fruits and vegetables may retain their antioxidant activity in spite of the loss of vitamin C. In a previous study by our group, we demonstrated that thermal processing of tomatoes significantly increased the extractable lycopene content and the total antioxidant activity. We also found that thermal processing of sweet corn significantly increased total antioxidant activity and phytochemical content despite the decline in vitamin C content. Our findings do not support the notion that processed fruits and vegetables have lower nutritional value than fresh produce. This information may have a significant impact on consumers' food selection and food processing industry. Assessment of phytochemical bioavailability of whole foods will also be discussed in this presentation. Phytochemicals have been suggested to be responsible for the health benefit of fruits and vegetables. However, there is limited knowledge on the bioavailability of specific phytochemicals from whole fruits and vegetable. It is possible that the bioavailability of the different mixture of phytochemicals may differ between foods. Given the limitation of using animal or human subjects, a simple alternative model for studying human intestinal absorption of carotenoids and flavonoids would be useful. This presentation will cover our current research on the development of a Caco-2 cell culture model coupled with an in vitro digestion process to assess bioavailability of carotenoids and flavonoids from whole foods.