

**Title** Changes in antioxidant profiles and free radical scavenging activity of minimally processed papaya during storage at different light intensities

**Author** Azizah Osman, Azizah Abdul-Hamid, Soo Siew Ching, Siti Sarah Md Diah and Azizah Misran

**Citation** Abstracts, 14<sup>th</sup> World Congress of Food Science & Technology, October 19-23 2008, Shanghai, China. 721 pages.

**Keyword** papaya; antioxidant; free radical

### **Abstract**

Epidemiological studies have shown that consumption of adequate fruits and vegetables is associated with a lower risk of degenerative diseases such as cancer, cardiovascular disease and various tumors. The protection provided for by vegetables and fruits were believed to be attributed to the presence of various antioxidants that protect humans against oxidative damages by inhibiting or quenching free radicals. These include ascorbic acid, carotenoids and various phenolic compounds that occur ubiquitously in fruits and vegetables. Light can cause photodegradation of food constituent especially antioxidants. Today, the change in lifestyle due to the upgraded living standard has increased the demand of convenience and fresh (or fresh-like) produce, which led to a relatively new area of food preservation, that is, minimally processed (MP) foods. The shelf-life extension of these fresh cut vegetables is therefore relevant because of its economic impact. Packaging can be one of the important factors in determining the storage stability and quality of these fresh-cut vegetables. This study was conducted to determine changes in carotenoids, ascorbic acid and total phenolic compound profiles and antioxidant activity of MP papaya during storage at different light intensities. The carotenoids and ascorbic acid were determined using RP-HPLC while total phenolic compound was determined using UV-VIS spectrophotometer. Antioxidant activity was determined using 2, 2-diphenyl-1-picrylhydrazyl (DPPH ) radical-scavenging assay. Three different types of packaging material that have different light permeability, namely aluminium foil, low density polyethylene (LDPE) cling wrap and polypropylene (PP); have been used to cover the MP papaya. Total phenolic compounds showed the highest losses after 4 days of storage at different light intensities. Papaya covered with aluminium foil showed the highest level of carotenoids, ascorbic acid and total phenolic compounds, followed by polypropylene and LDPE cling wrap after 4 days of storage (4-100C). Results obtained in this study also indicate that the scavenging activity of papaya covered with aluminium foil was found to be higher ( $p < 0.05$ ) than that covered with polypropylene and LDPE cling wrap, with an IC<sub>50</sub> values of 2.45, 3.04, 3.70 mg/ml and 4.65, 5.93 and 6.64 mg/ml on the first and fourth day of storage respectively. As the storage days increased, the radical-scavenging activity of MP papaya decreased. In conclusion, MP papaya exposed to higher light intensities resulted in a decrease of both antioxidant content and radical-scavenging activity. Packaging materials of low light intensity can retain more antioxidants in the MP fruit during storage.