

Antioxidant Activity of *Morinda citrifolia* L. (Noni) Fruits at Three Different Stages of Maturity in Food Systems

Authors : Deena Ramful-Baboolall, Eshana B. N. Bhatoo

Abstract : *Morinda citrifolia* L., commonly known as noni fruit, is rich in phytochemicals. This study investigated the phytochemicals content and antioxidant activity of green, mature green and ripe noni fruits. The vitamin C content ranged from 41.12 ± 0.083 to 143.63 ± 0.146 mg / 100 ml in fresh noni fruits. Ripe fruits contained the highest level of ascorbic acid followed by mature green and green fruits ($p < 0.05$). The total phenol content ranged from 0.909 (green) to 2.305 (ripe) mg / g of FW whilst the total flavonoid content ranged from 1.054 (green) to 2.116 (ripe) mg/g of FW. The in vitro antioxidant activity of the *Morinda citrifolia* L. extracts was also analysed using FRAP and TEAC assays. The reducing power of the fruit extracts as assessed by the FRAP assay decreased in the following order: ripe > mature green > green ($p < 0.05$). The TEAC values ranged from 0.2631 to 0.8921 $\mu\text{mol} / \text{g}$ FW, with extracts of fruits at the mature green stage having highest values followed by fruits at the ripe and green stage respectively ($p < 0.05$). High correlation values were obtained between total phenolics, total flavonoids, ascorbic acid contents and the TEAC and FRAP assays ($r > 0.8$). Noni fruit extracts (0.2 and 0.4 % m / m) were compared with BHT (0.02 % m / m) on their ability to protect canola oil and mayonnaise, prepared with canola oil, against lipid oxidation during storage at 40°C. Mature green and ripe extracts, at both concentrations, were more effective than BHT in retarding oxidation in both food systems as evidenced by peroxide value and conjugated diene value determinations. Noni extracts were also very effective in inhibiting lipid peroxidation in tuna fish homogenates, assessed using TBARS assay. Noni fruits at the mature green and ripe stages represent a potential source of natural antioxidants for use as a food additive.

Keywords : antioxidant, canola oil, mayonnaise, *Morinda citrifolia* L. fruit extracts, total flavonoids, total phenol

Conference Title : ICFSRTI 2017 : International Conference on Food Science Research, Technology and Innovation

Conference Location : Sydney, Australia

Conference Dates : December 04-05, 2017