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In vitro antioxidant activity of Sri Lankan wild type *Carica papaya* L. mature leaf concentrate

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Oxidative stress appears to be the fundamental mechanism underlying a number of human diseases. Generation of reactive oxygen (ROS) and nitrogen (RNS) species is a feature of infectious diseases such as dengue, malaria, leptospirosis, and chickungunya. These free radicals can be scavenged by antioxidants. Antioxidants can occur endogenously in the body or be obtained from dietary supplement. Plant derived antioxidants have gained much attention due to less side effects and the cost concerned. The fresh leaf concentrate of *Carica papaya* is claimed as a powerful remedy against infectious diseases including dengue and malaria. However, thus far the antioxidant activity of fresh mature leaf concentrate (MLC) of Sri Lankan wild type *C. papaya* has not been investigated. Thus, the present study evaluated the phyto-constituents and the *in vitro* antioxidant properties of the mature leaf concentrate (MLC) of *C. papaya* Sri Lankan wild type variant.

Qualitative photochemical analysis of MLC established the presence of alkaloids, polyphenols, flavonoids, saponins, tannins, proteins, carbohydrates and amino acids. The total phenolics, flavonoids, proteins and ascorbic acid of the concentrate were found to be 39.66 ± 0.38 mg g^{-1} Gallic acid equivalent, 26.33 ± 1.45 mg g^{-1} as Quercetin equivalent, 3.77 ± 0.29 mg g^{-1} and 0.94 ± 0.019 mg g^{-1}, respectively. The MLC imparted dose dependent radical scavenging activities with half maximal inhibitory concentrations (IC_{50}) (linear regression analysis of triplicate experiments) of 30.91, 81.82, 412.40, 194.22, and 3412 µg cm^{-3} against ABTS, DPPH, H_2O_2, NO, and SO radicals, respectively. Further, the MLC showed a more powerful ability to reduce ferric ions into ferrous ions, than the standard drug, ascorbic acid. The strong reducing and antioxidant properties of MLC could be attributed to the presence of high concentrations of phenolics, flavonoids, proteins and vitamin C in this preparation, which may synergistically reduce the oxidative stress induced by infections.
The present study established that the mature leaf concentrate of Sri Lankan wild type *C. papaya* is a powerful source of natural antioxidant that may plausibly be effective against oxidative stress induced pathophysiology of many diseases.

Keywords: Oxidative stress, antioxidant, *Carica papaya,* mature leaf concentrate

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