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Comparing antioxidant activities in leaf and unripen fruit of hybrid and generic papaya

Chelliah D[1], Senthilnanthanan M[2], Srikokulan S[1*]

[1]Department of Pharmacy, Faculty of Allied Health Sciences, University of Jaffna, Sri Lanka, [2]Department of Chemistry, Faculty of Science, University of Jaffna, Sri Lanka

Background: Oxidative stress seems to be the fundamental process causing several human diseases such as arthritis and cancer. Antioxidants are substances which significantly delays or inhibits oxidation of substrates which occur in human body or obtained from food. Papaya leaf and unripen fruit, which possess these antioxidant compounds, are recognised as natural therapeutic agents for curing inflammation and infections, preventing cancer and reducing the risk of heart diseases. Though the antioxidant property of generic papaya in Sri Lanka has been reported, the level of antioxidant activity presents in hybrid papaya (H) compared to the generic variety (G) has not been investigated so far.

Objective: To compare the antioxidant activity of leaf and unripe fruit of hybrid and generic papaya variety.

Method & Materials: The leaves and unripen fruits of generic and hybrid (Red lady) papaya were collected from Agricultural Research Centre in Jaffna, Sri Lanka. All the parts were washed and shade dried. Dried parts were powered and extracted by percolating separately with Methanol (M) and Ethyl Acetate (EA). The percolate mixtures were filtered and then the solvent was removed in a rotary evaporator. Subsequently, 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging assay was performed separately on the extracts of the papaya samples to determine their antioxidant activities by employing ascorbic acid as the standard. The IC_{50} values for the extracts were calculated from the respective DPPH assays and it was analyzed with one-way ANOVAs.

Results: The leaves of hybrid and generic papaya extracted in M and EA solvents revealed the IC_{50} values as follows: 619.803 (H, M), 996.762 (H, EA), 1417.254 (G, M), and 2777.966 (G, EA) µg/mL. Similarly, the unripen fruits of hybrid papaya extracted in M and EA exhibited IC_{50} values of 2335.930 (H, M) and 6093.098 (H, EA) µg/mL respectively whereas IC_{50} values of the corresponding extracts of unripen fruit of generic papaya were found to be 3445.669 (G, M) and 6652.293 (G, EA) µg/mL.

Conclusion: In the present study, the leaf and unripen fruit of hybrid papaya showed greater antioxidant activity compared to the generic papaya. Therefore, hybrid papaya could be a better source of antioxidants than generic papaya.