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Evaluating Selected Pharmacognostic Properties and Bioactivities of *Careya arborea*

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Careya arborea (wild guava), is native to South and Southeast Asia. It has been traditionally used for its medicinal properties. Fruit, leaf, and stem parts of *Careya arborea* plant were subjected to methanol extraction. In vitro bioassays were conducted to determine the medicinal properties of this plant. The total phenolic content (TPC) was measured by the Folin–Ciocalteu assay. The results showed that the leaf extract had the highest TPC of 1.23 GAE/g. Total flavonoid results were measured by the Aluminum Chloride colorimetric assay which showed that the leaf extract had the best TFC of 0.06 QE/g. The antioxidant activity was determined by the 2,2-diphenyl-1-picrylhydrazyl (DPPH) assay where a maximum radical scavenging value of 61.81% at 1mg/ml (maximum concentration tested) was found for the fruit extract while both the leaf and stem showed a value of 51%. The standard ascorbic acid showed a value of 71.42%. However, the 2,2′-azino-bis-(3-ethylbenzothiazoline-6-sulfonic (ABTS) assay showed that the leaf extract had the highest radical scavenging ability with a value of 86.14% while the fruit and leaf showed 62.60% and 66.54% respectively (standard ascorbic acid 92.50%). The anti-inflammatory activity was determined by the Human Red Blood Cell Membrane Stabilization assay (HRBC) and the Protein Denaturing assay. The HRBC results depicted 75.52%, 70.73%, and 62.89% for the stem, leaf, and fruit respectively at 1mg/ml. The standard Ibuprofen showed 79.35%. The protein denaturing results demonstrated 77.81%, 71.92%, 69.65%, and 73.68% for leaf, stem, fruit, and Ibuprofen respectively. Finally, the cytotoxicity was determined by the 3-(4, 5-dimethylthiazolyl-2)-2, 5-diphenyltetrazolium bromide (MTT) assay against the MCF7 breast cancer cells. The fruit extract showed the maximum cancer cell inhibitory value of 54.69% at 1mg/ml out of all extracts. These findings underscore the therapeutic potential of the plant extracts and warrant further investigations.

Keywords: *fruit sample of careya arborea, stem sample of careya arborea, leaf sample of careya arborea, TFC, TPC, DPPH, ABTS, HRBC, protein denaturation, MTT assays*