# Garcinia binucao Fruit and Leaf: Phytochemicals-Mediated Antioxidant, Alpha-Amylase and Alpha-Glucosidase Enzyme Inhibitors

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Type 2 Diabetes mellitus is a serious global health problem that is characterized by postprandial hyperglycemia. Presently, long-term use of commercial drugs in the management of diabetes has adverse effects and prevention with the use of phytochemicals is proven effective. An indigenous plant growing abundantly in the Western Visayas region, Garcinia binucao is used as folklore medicine for dysentery and as a souring agent in local dishes but little is known about its phytochemical properties and other therapeutic uses.The study quantified the phytochemicals present in Garcinia binucao fruit and leaf, the antioxidant activities and the a-amylase and the a-glucosidase percent inhibitions with IC50 values. Fruits and leaves of Garcinia binucao were randomly collected, lyophilized to remove moisture, homogenized in ethanol and extracted in vacuo which yielded the solid pastes and utilized for the various assays. Results showed that both leaf and fruit are rich in phytochemicals: flavonoids of 3081.18 and 462.68 mg CE quantified using aluminum chloride colorimetric method, anthocyanidins of 3584.39 and 626.01 mg CE by Vanillin-hydrochloride acid method, and polyphenols of 5283.68 and 1756.16 mg GAE using Folin-Ciocalteu method. High antioxidant activity of 90.13 and 78.46 percent inhibitions using DPPH free radical scavenging activity assay and 3173.09 and 1056.10 mg TE using FRAP assay. Very low IC50 values for the a-amylase of 41.28 and 41.21 ppm and a-glucosidase of 53.28 and 50.20 ppm suggesting effective enzyme inhibitions of the samples. Both Garcinia binucao phytochemical-rich leaf and fruit have the properties potential for lowering postprandial hyperglycemia.

**Awards Won:**