

Comparative Analysis of *Annona muricata* and *Annona reticulata* Crude Seed Extracts; Phytochemical Analysis, Antioxidant Activity and Fatty Acid Composition

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Annona muricata (Soursop) and *Annona reticulata* (Custard apple) belong to the Annonaceae family and are known fruit plants from a medicinal perspective. The study was conducted to find out the differences in terms of phytochemical and fatty acid compositions of these two species. The crude seed extracts of these *Annona sp.* were subjected to phytochemical analysis and FRAP (Ferric reducing antioxidant power assay) and ORAC (Oxygen radical absorbance capacity) assays. The fatty acid composition was conducted using Gas chromatography and mass spectrometry (GC-MS). Phytochemical screening revealed the presence of alkaloids, saponins, tannins, steroids, terpenoids, and flavonoids in the crude seed extracts. The statistical analysis was done using the t-test Minitab 17 software package. The seed of Custard apple exhibited the highest total phenolic content (TPC) at 18.326 ± 0.416 mg GAE/g Dry weight (DW), and the Soursop seed at 12.67 ± 3.9 mg GAE/g DW ($P > 0.05$). The total alkaloid content of custard apple was recorded as 1.05 ± 0.04 g/DW and 1.22 ± 0.02 mg/g for soursop ($P > 0.05$). The terpenoid content was 0.16 ± 0.003 g/DW and 0.11 ± 0.01 g/DW ($P > 0.05$) for Custard apple and Soursop seed extracts, respectively. ORAC values for Custard apple seed extract was 32.27 ± 7.08 mg TE/g, and for Soursop seed extract was 76.3 ± 2.58 mg TE/g ($P < 0.05$). The FRAP values were 70.84 ± 5.62 mg TE/g for Custard apple to 107.38 ± 8.27 mg TE/g for Soursop extract ($P < 0.05$). *A. muricata* and *A. reticulata* include (47.26%-45.93%) 9-Octadecenoic acid (Z)-methyl ester (oleic acid), (33.02-27.38%) 9,12-Octadecenoic acid hexadecanoic acid methyl ester (palmitic acid) and (18.98%-17.41%) 9,12,15-Octadecatrienoic acid, methyl ester (linolenic acid methyl ester) at (2.4%-1.6%). The Alkaloids content of these two species has shown remarkable enhancement that due to their inherent character. This species all alone isolated 83 alkaloid compounds so far. The findings suggest that the soursop seed extracts demonstrate a high level of antioxidant activity, possibly attributed to the presence of compounds such as alkaloids content (1.22 ± 0.02) g/DW, terpenoids, and fatty acid content for soursop seed extract compared to the custard apple seed extract.

Keywords: *Annona sp.*, antioxidant, fatty acid composition, secondary metabolites