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BIOACTIVITY STUDIES, POTENTIAL USES AND LC-MS/MS ANALYSIS OF *Flacourtiainermis* FRUIT EXTRACTS**A. G. A. W. Alakolanga^{1,2}, U. L. B. Jayasinghe¹, N. S. Kumar¹**¹*Institute of Fundamental Studies, Kandy*²*Post Graduate Institute of Science, University of Peradeniya*

Flacourtiainermis is a small, evergreen tree, native to Malaysia and grown in South Asian and African regions as well. Fruits are edible, red pulpy berries with an acidic taste and have some economic value. The current study was carried out to determine the bioactivity exhibited by chemical constituents present in extracts of the fruits of *F. inermis* and potential health benefits of consuming these fruits.

Fruits of *F. inermis* have not been studied extensively for their biochemical properties. However, there are a few previous reports about their antioxidant, antifungal activity and antiprotozoal activities. The presence of caffeoylquinic acid derivatives, quinic acid, malic acid, phenolic glucoside derivatives, flavanoids, and phenolic acids has been reported. During the current study the cytotoxic activity, phytotoxic activity, antioxidant activity and amylase inhibition activity of the ethyl acetate (EtOAc) extract, methanol (MeOH) extract and n-butanol (n-BuOH) extract of fresh fruits of *F. inermis* were determined.

All three extracts showed significant cytotoxic activity against second instar nauplii of *Artemiasalina*. LD₅₀ values of EtOAc, MeOH and n-BuOH extracts were 289 ppm, 315 ppm and 260 ppm respectively. The EtOAc extract showed significant phytotoxic activity against seed germination of *Lactuca sativa* and 100% inhibition was exhibited at 2000 ppm. The n-BuOH extract was moderately active and 100% inhibition was shown at 3000 ppm. The MeOH extract was least active and showed 100% inhibition at 5000 ppm. All three extracts showed amylase inhibition activity against porcine pancreatic α -amylase enzyme in phosphate buffer (pH 6.8) at room temperature. IC₅₀ values were; EtOAc extract- 1120 ppm, MeOH extract – 1855 ppm, n-BuOH extract- 2350 ppm and Acarbose (standard) – 20 ppm. All extracts showed significant antioxidant activity against DPPH free radical in methanol. IC₅₀ values observed were: EtOAc extract-115ppm; MeOH extract- 250 ppm; n-BuOH extract-175 ppm; Butylated hydroxyl anisole (standard) – 28 ppm.

Preliminary results indicate that the fruits of *F. inermis* display useful bioactivities. The high antioxidant activity of the MeOH and EtOAc extracts may be attributed to the presence of caffeoylquinic acid derivatives. Several isomeric 3-caffeoyl quinic acids m/z [M-H]⁻ 353; 5-caffeoyl quinic acids m/z [M-H]⁻ 353; and dicaffeoylquinic acids m/z [M-H]⁻ 515, have been detected in the 90% MeOH extract using LC-MS/MS.