

A Comparative Analysis of Phytochemical Composition, Anti-oxidant and Anti-inflammatory Activity between *Garcinia quesita* and *Garcinia zeylanica* Fruit Rind by Five Extraction Methods

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Abstract

Garcinia quesita and *Garcinia zeylanica* are endemic to Sri Lanka. *Garcinia* rind extracts are used to treat ulcers, asthma, diabetes mellitus, and hyperlipidemia by the traditional medicine practice. However, studies on photochemical, antioxidant activity and anti-inflammatory activity of them have not been documented enough. Therefore, this study aimed to conduct a comparative account on the fruit rinds of both plants. Fruit rind extraction was conducted by five different methods i.e., by two hot water extractions at temperatures of 100°C and 55-60°C, by autoclaving at 115°C, 1 bar, and by two macerations using water and ethanol. Subsequently, antioxidant activity using (2,2-diphenyl-1-picryl-hydrazyl (DPPH)) assay, anti-inflammatory activity using Human Red Blood Cell (HRBC) membrane stabilization assay and albumin denaturation assay, Total Phenolic Content (TPC) and Total Flavonoid Content (TFC) were determined for all extracts. All the extracts of *G. quesita* demonstrated higher activity compared to the corresponding extract *G. zeylanica*. Out of them, ethanol extract of *G. quesita* showed the highest value for TPC (576.79 ± 4.04 mg GAE/g) and highest value for TFC (322.51 ± 2.21 mg QE/g). For the DPPH assay, ethanolic extract of *G. quesita* showed 71.82% of inhibition for the highest concentration tested which is (1 mg/ml). Further, the extract of *G. quesita* prepared by the ethanol maceration method showed an inhibition of 82.42% for the HRBC assay for 1 mg/ml, and an inhibition of 77.62% for the albumin denaturing assay for 1 mg/ml. It can be concluded that *G. quesita* demonstrates higher antioxidant and anti-inflammatory activity and higher TPC and TFC values compared to *G. zeylanica*.

Keywords: *Garcinia quesita*, Anti-oxidant activity, Anti-inflammatory activity