Qualitative and Quantitative Phycochemical Analysis of *Gracilaria corticata* (Red Seaweed)

H.M. Weerasinghe[1], W.M.K.M. Ratnayake[2], S.M. Rafiquzzaman[3], T.S. Suresh[4], K.V.K. Gunathilake[1]*

[1]*Department of Zoology, Faculty of Applied Sciences, University of Sri Jayewardenepura, Sri Lanka.*
[2]*Department of Cosmetic Science, Faculty of Health Sciences, CINEC Campus, Malabe, Sri Lanka.*
[3]*Department of Fisheries Biology and Aquatic Environment, Faculty of Fisheries, Gazipur Agricultural University, Bangladesh.*
[4]*Department of Biochemistry, Faculty of Medical Sciences (FMS), University of Sri Jayewardenepura, Sri Lanka.*
*varunig@sjp.ac.lk

The qualitative and quantitative phycochemical profile of *Gracilaria corticata* provides important information on its potential biological applications. This research aims to analyse the qualitative and quantitative phycochemicals of *Gracilaria corticata*, an abundant red seaweed on the Sri Lankan coast. The samples were collected from Thalpe and Koggala, Sri Lanka, prepared as a fine powder, and used for qualitative and quantitative phycochemical analysis. Six extracts were prepared by maceration and rotary-evaporation, in hexane, 50% ethanol, 75% ethanol, 99.5% ethanol, dichloromethane (DCM), and methanol. The qualitative phycochemical screening was performed for alkaloids, flavonoids, phenols, tannins, terpenoids, anthraquinones, reducing sugar, glycosides, saponins, steroids, proteins, and amino acids. For the quantitative determination of total phenolic content (TPC) and total flavonoid content (TFC), the Folin-Ciocalteau and Aluminum Chloride colorimetric methods were used at 765 nm and 430 nm, respectively. According to the results, alkaloids and amino acids were absent in DCM and hexane extracts, while proteins were not detected in the 50% and 75% ethanol. Terpenoids, glycosides, and steroids were absent in the hexane extract, while tannins were absent in 50% ethanol. Anthraquinones were not observed in methanol, DCM, and hexane extracts. Flavonoids and phenols were present in all extracts, while saponins were absent. Reducing sugars were detected in methanol, 75%, and 99.5% ethanol extracts. The TPC of each extract was recorded as mg Gallic acid equivalents (GAE)/g of extract: 14.91, 46.69, and 19.11 mg GAE/g of extract, respectively for 75% ethanol, DCM, and methanol. TFC of each extract was recorded as mg Quercetin equivalents (QE) per gram extract, and values were 83.66, 673.66, and 153.66 mg QE/g extract of 75% ethanol, DCM, and methanol, respectively. The DCM extract contained the highest amount of phenols and flavonoid content, followed by methanol and 75% ethanol. The comprehensive analysis of phycochemicals in *G. corticata* serves as an important reference for future bioactivity-guided research.

Keywords: *Gracilaria corticata, Quantitative and qualitative phycochemical screening, Folin-Ciocalteau colorimetric method, Aluminum Chloride colorimetric method, Total phenolic content (TPC), Total flavonoid content (TFC)*