(163)

In Vitro Antioxidant and Anti-Inflammatory Activities of Polysaccharide Fraction of Green Seaweed *Codium fragile* Extract (Suringar, 1867)

Jayasinghe S.C.[1], Manawadu M.C.K.[1*], Samarakoon K.W.[2], Ranasinghe P.[3], Peiris L.D.C.[1]

[1]Department of Zoology, Faculty of Applied Sciences, University of Sri Jayewardenepura, Nugegoda, Sri Lanka
[2]Industrial Technology Institute, Halbarawa Gardens, Malabe, Sri Lanka
[3]National Science and Technology Commission, Colombo 08, Sri Lanka
**chamalika28@gmail.com*

Abstract

Marine seaweeds are a renewable source that possess different biological activities. The current study investigated the total phenolic and flavonoid contents and selected biological activites of the polysaccharide fraction of methanol crude from *Codium fragile* (Family: Codiaceae). Dried seaweed was extracted with 70% methanol and the polysaccharide fraction was separated. Total phenolic (TPC), total flavonoid (TFC) contents were determined using standard methods. Anti-inflammatory activity was evaluated using albumin (protein) denaturation, trypsin (proteinase) inhibitory and membrane stabilisation assays, while antioxidant activity was conducted using DPPH radical scavenging assay and ferric reducing antioxidant power (FRAP) assay. TPC, TFC values were 21.01±0.90 µg GE/g, 24.14±4.50 µg QE/g, respectively. Ferric ion reducing power recorded as 10.84±0.58 µg TE/g and IC_{50} value of DPPH radical scavenging activity was 1685.3±4.4 µg/ml and less effective than Trolox standard (IC_{50}=10.4±0.4 µg/ml). IC_{50} values of albumin (protein) denaturation was 506.2±1.8 µg/ml and less effective than Aspirin standard (29.3±0.5 µg/ml). Anti-inflammatory potential according to the trypsin (proteinase) inhibitory assay and membrane stabilisation assay were 65.4±0.4 µg/ml and 3027.6±4.7 µg/ml, respectively and these values were less effective than that of diclofenac sodium standard (IC_{50}=14.2±0.5 µg/ml). According to the results, the polysaccharide portion showed a potent anti-inflammatory activity compared to antioxidant properties. Hence further investigations on anti-inflammatory properties and isolation of active compounds are warranted.

Keywords: *Codium fragile*, Antioxidant, Anti-inflammatory, Polysaccharide, Green algae

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