

Seaweeds of Mauritius: Phenolic rich extracts with antioxidant properties

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Free radicals are well known to contribute to the aetiology of various human diseases. Under normal conditions free radicals are effectively eliminated by antioxidant defence systems. However under pathological conditions, the human's endogenous antioxidant defence systems are inadequate to completely prevent oxidative stress, thus the importance of an exogenous source of antioxidants. This study aimed at analysing seaweeds from the Mauritian coasts as potential source of exogenous antioxidants. 44 species of seaweeds were analysed. A multi antioxidant assay system comprising five assays namely, di(phenyl)-(2,4,6-trinitrophenyl)iminoazanium (DPPH) scavenging assay, superoxide (SO) scavenging assay, nitric oxide (NO) scavenging, ferric reducing antioxidant potential (FRAP) and iron chelating assay were used. Total phenolic (TPC) and total flavonoid contents (TFC) of the methanolic extracts were also determined. The potent extracts were subsequently tested for their reactive oxygen species (ROS) scavenging activity, using H₂O₂ as ROS inducer in SW 872 human liposarcoma cells. All tested extracts showed antioxidant activities in the battery of assays tested and were found to be rich in phenolics. Red macroalgae namely *Portieria trippinata*, *Acanthophora spicifera*, *Hypnea musciformis*, brown macroalgae including *Turbinaria ornata* and *Hydroclathrus clathratus*, green macroalgae *Halimeda discoidea* and *Ulva prolifera* exhibited high antioxidant activities in most antioxidant assays and possessed higher amount of phenolic contents compared to other species studied in their family. Species showed potent activity e.g. *P. trippinata* had EC₅₀ values of 0.25 ± 0.035 mg/mL in DPPH scavenging activity and *H. musciformis* had EC₅₀ values 0.24 ± 0.02 mg/ml in Iron chelating ability assay, respectively). In the ROS scavenging assay *H. musciformis* and *T. ornata* were potent in scavenging ROS with IC₅₀ ranging between 86-120 µg/mL. Macroalgal species with high antioxidant propensity and phenolic composition thus stand as potential candidates for more in depth studies.