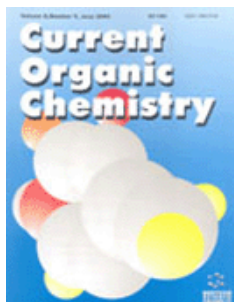


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Antioxidant Potential of Solvent Partitioned Extraction from Aqueous Extract of Gracilaria Tenuistipitata

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Graphical Abstract:

Abstract:

Many algal extracts or algal bioactive ingredients have potential in suppressing cancer or different biological mechanisms. We previously found that aqueous extracts of *Gracilaria tenuistipitata* (AEGT) contained abundant antioxidants with protective effects against several reactive oxygen species (ROS) related DNA damages and diseases. However, the properties of crude extracts may limit its further applications. The aim of this study was to investigate the antioxidant and chelating activities of different AEGT partitionates by liquid-liquid solvent partitioned extraction. Three different solvents-partitioned extracts of AEGT, namely ethyl acetate (AEGT-pEA), n-butanol (AEGT-pBuOH) and distilled water (AEGT-pW), were separated for evaluating its total phenol (TPC), total flavonoid content (TFC), its 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging activity, 2,2-azinobis (3-ethyl-benzothiazoline-6-sulfonic acid) (ABTS) radical scavenging, ferric reducing antioxidant power, and ferrous ion-chelating ability. The TPC, DPPH/ABTS radical scavenging, and reducing powers at low polarity solvent partitions (AEGT-pEA and AEGT-pBuOH) were significantly higher than those of AEGT and AEGT-pW ($p < 0.0001$). In contrast, AEGT-pEA and AEGT-BuOH exhibited significantly lower TFC than AEGT-pW and AEGT ($p < 0.005$). The AEGT-pEA has the highest chelating ability compared to other partitions. The DPPH/ABTS radical-scavenging, reducing, and chelating powers show a dose responsive manner. In conclusion, we found the liquid-liquid solvent partition can further separate the AEGT into several potential partitions with more abundant antioxidant property than that of AEGT without partitioning.

 Keywords: Antioxidant, chelating capacity, free radical scavengers, *Gracilaria tenuistipitata*, partitioned extraction, red algae.

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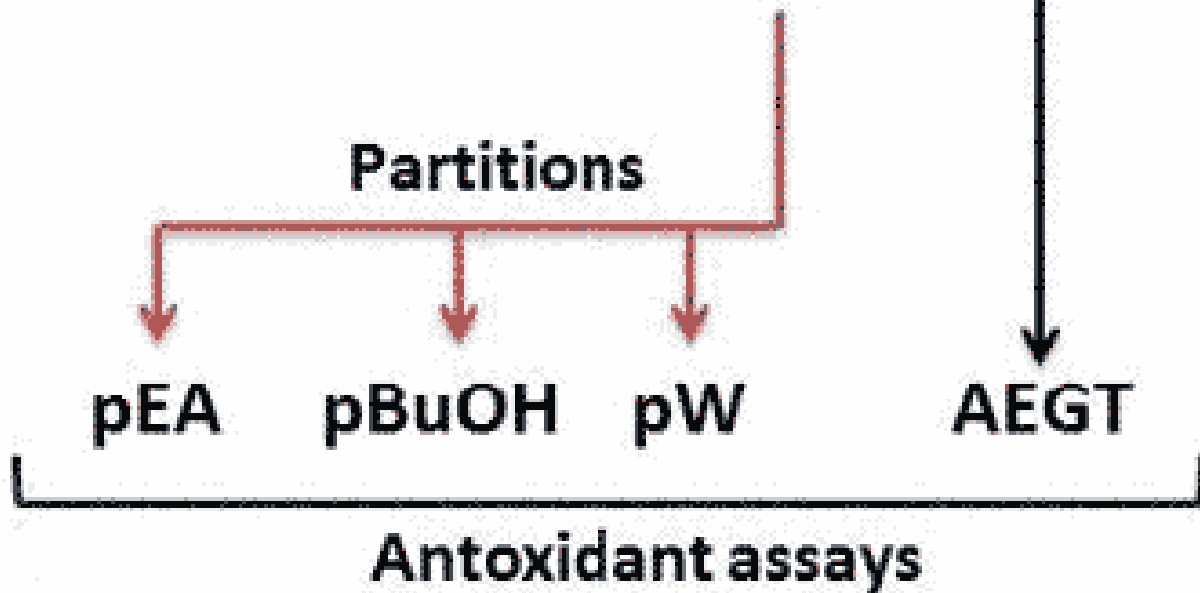
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Aqueous extract of *Gracilaria tenuistipitata* (AEGT)



1. TPC
2. TFC
3. DPPH radical scavenging activity
4. ABTS \cdot^+ radical scavenging activity
5. Reducing power
6. Chelating capacity

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