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Volume 20, Issue 7, 3 July 2017, Pages 1457-1469

Chemical structure of sulfated polysaccharides from brown seaweed (Turbinaria turbinata) (Article)

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Abstract

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The chemical structure of three sulfated polysaccharides fractions (TtF1, TtF2, and TtF3) obtained from anion-exchange separation of aqueous extracts of brown seaweed (Turbinaria turbinate) were studied. The infrared spectra patterns showed that the fractions possess functional groups similar to that of sulfated polysaccharides. The sulfated polysaccharides fractions exhibited molecular weights of 223.5, 495.5, and 326.05 kDa, respectively, for TtF1, TtF2, and TtF3. ^{1}H NMR spectra of TtF2 and TtF3 contain α-anomeric protons (5–5.6 ppm), ring protons (3.4–4.4), and methyl protons (1–1.3 ppm) while that of TtF1 only exhibited ring protons and methyl protons. Rheological data were fitted to power law which revealed that the fractions were Newtonian and/or presented weak pseudoplastic behavior. Consistency values increased with concentration in all fractions. Consistency values of TtF2 were the highest, followed by TtF1 and then TtF3. Thermal degradation patterns of TtF1 and TtF2 were similar but different from that of TtF3. This study confirmed that chemical and physical characteristics of sulfated polysaccharides fractions are interrelated and provided in-depth understanding of sulfated polysaccharides of brown algae. © 2017 Taylor & Francis Group, LLC.

Author keywords

Alginate, Laminaran Brown seaweed Fucoidan Rheology Sulfated polysaccharide Thermogravimetric

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Indexed keywords

Engineering controlled terms: Algae, Degradation, Nuclear magnetic resonance spectroscopy, Polysaccharides, Rheology, Seaweed, Structure (composition)

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Brown seaweed
Chemical and physical characteristics
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