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## Isolation and Characterization of Alginate from *Hizikia fusiformis* and Preparation of its Oligosaccharides

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In this study, alginate was isolated from the residues of *Hizikia fusiformis*, after extraction of the fucoidan. The yield, total carbohydrate, uronic acid, ash and moisture of alginate was 2.6% (based on wet material), 85.2, 80.5, 12.1 and 2.2%, respectively. The molecular mass of alginate was calculated to be about  $7.0 \times 10^4$ . The <sup>1</sup>H- and <sup>13</sup>C-NMR and IR spectra of alginate from *H. fusiformis* were in agreement with those of standard alginate. From the integral of the anomeric proton signals of D-mannuronic (M) and L-guluronic (G) acid residues in the <sup>1</sup>H-NMR spectrum, the molar ratio of both residues was calculated to be M: G=0.53: 1. Eight alginate oligosaccharides were also isolated by gel permeation chromatography after using commercially available enzymes and were characterized by 2 D NMR techniques and ESI-MS spectrometry as Δ(4-deoxy-L-erythro-hex-4-enopyranosyluronate) GGGG, ΔGGG, ΔGG, ΔG, ΔMMMM, ΔMMM, ΔMM and ΔM.

**Key words:** alginate, alginate oligosaccharide, fucoidan, *Hizikia fusiformis*

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