Production and Characterization of Carrageenan from Eucheuma Cottonii, Euheuma Spinosum and Sargassum Polycystum Seaweed by using Fourier Transform Infra Red

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Abstract. Background Carrageenan is a polysaccharide which is contained in seaweed and widely used as an additional ingredient in the various food products, beverages or cosmetics production. This research aimed to produce and determine the characteristics of carrageenan from seaweed species of Eucheuma cottonii, Euheuma spinosum and Sargassum polycystum by using FTIR (Fourier Transform Infra Red). Methodology the carrageenan was analyzed by using FTIR spectrophotometer. Carrageenan samples were made in the form of pellets with KBr, and scanned in the frequency range between 4000 cm-1 to 400 cm-1 Results Describe your results here. You may include figures and tables following the format of Figure 1 and Table 1. Please note that you may wrap text around figures and tables. All tables and figures should fit in a way that is consistent with the look & feel of the template, including respecting page margins. There should be no hyperlinks (to images etc.); these must be "embedded" into the submitted file. Discussion The results of this study showed that respectively Eucheuma cottonii and Euheuma spinosum obtained percentage of yield for 33.98 and 21%, water content for 5.24 and 1.40%, ash content for 19.82 and 21.12, also viscosity for 40.0 and 48.0 Cp. The result of FTIR characterization showed that carrageenan spectrum produced was similar to carrageenan spectrum standard. FTIR spectrum for Eucheuma cottonii showed that Kappa-type carrageenan was indicated by the presence of galactose-4-sulfate group on the spectrum of 846.75 cm-1, sulfate ester group on the spectrum of 1263.37 cm-1, 3.6-anhydrogalactose group on the spectrum of 927.76 cm-1, and glycoside bonds in the spectrum of 1070.49 cm-1. While FTIR characteristics for Euheuma spinosum showed iota carrageenan by producing sulfate ester bond type (1259.52), glycoside bond (1072.42), 3,6-anhydrogalactose (929.69), galactose-4-sulfate (848.68), and 3,6-anhydrogalactose-2-sulfate (804.32). On the other hand, Sargassum polycystum seaweed did not produce carrageenan, so the determination of characteristics could not be done. Conclusion Based on the results of research, it can be concluded that Carrageenan can be produced from Eucheuma cottonii and Eucheuma spinosum seaweed species, while Sargassum polycystum does not produce carrageenan. The physical and chemical characteristics of carrageenan produced from Eucheuma cottonii and Eucheuma spinosum seaweed species meet the quality standards of carrageenan based on FAO. Carrageenan produced from Eucheuma Cottonii seaweed is considered as a Kappa-type carrageenan and Euheuma spinosum as Iota-type carrageenan.

Keyword: carrageenan, seaweed, FTIR