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Volume 24, 2017, Pages 522-528Production of refined carrageenan from *Kappaphycus alvarezii* on pilot plant scale: Optimization of water extraction using response surface methodology (Article)Nurmiah, S.<sup>a,b</sup>, Syarief, R.<sup>a</sup>, Sukarno<sup>a</sup>, Peranginangin, R.<sup>c</sup>, Nurtama, B.<sup>a</sup>, Jaswir, I.<sup>d,e</sup> [✉](#) [👤](#)<sup>a</sup>Department of Food Science and Technology, Bogor Agricultural University (IPB), Bogor, Indonesia<sup>b</sup>Politeknik Pertanian Negeri Pangkep, South Sulawesi, Indonesia<sup>c</sup>Research Centre for Marine and Fisheries Product Processing and Biotechnology, Jakarta, Indonesia[View additional affiliations](#) [v](#)

## Abstract

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A refined carrageenan is a form of carrageenan, extracted from red algae and purified. Important factors affecting the commercial production of carrageenan after alkaline extraction are the ratio of seaweed to water, temperature, and extraction time. In this study, extraction of refined carrageenan from *Kappaphycus alvarezii* was conducted on pilot plant scale. Extraction conditions were varied, affecting the final characteristics of the carrageenan product. The optimum conditions investigated for the extraction process included the ratio of seaweed to water, temperature, and extraction time determined using Response Surface Methodology (RSM). Box-Behnken was used to investigate the interaction effects of three independent variables, namely seaweed to water ratio, extraction temperature and extraction time. The results showed that based on the RSM approach, ratio of seaweed to water, temperature and extraction time had a significant influence on the carrageenan. Optimum extraction conditions obtained were seaweed to water ratio of 1:25.22, extraction temperature of 85.80°C and extraction time of 4 h. Under these optimal conditions, the yield obtained was 31.74 % and gel strength was 1833.37 g.cm<sup>-2</sup>. © All Rights Reserved.

SciVal Topic Prominence [i](#)

Topic: Carrageenan | Seaweed | red seaweed

Prominence percentile: 87.129 [i](#)

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