

## RINGKASAN

MAHARANI. Optimasi dan Analisis Fisiko-Kimia Karagenan Rumput Laut (*Kappaphycus alvarezii*) Menggunakan Material *Bead Mill Zirconium Beads* Dibimbing oleh AIDIL FADLI ILHAMDY dan R. MARWITA SARI PUTRI.

Karagenan merupakan salah satu jenis polisakarida hidrokoloid yang memiliki nilai ekonomis tinggi. Khususnya karagenan yang di peroleh dari *Kappaphycus alvarezii* yang memiliki potensi luas karna kemampuannya membentuk gel. Metode ekstraksi yang sedang dikembangkan Adalah metode *Bead Mill Zirconium Beads*. Penelitian ini bertujuan untuk mengetahui efektifitas penggunaan *Bead Mill Zirconium Beads* sebagai alternatif metode ekstraksi karagenan, memperoleh konsentrasi ekstraksi yang optimal, serta Menganalisis sifat fisiko-kimia karagenan Rumput Laut *Kappaphycus alvarezii* asal kabupaten karimun dan kabupaten lingga. Metode penelitian Rancangan Acak Lengkap (RAL) dengan Dua faktor yaitu variasi Konsentrasi Rumput Laut 2%, 2,4%, 2,8%, dan 3,2% (b/v) serta perbedaan daerah pengambilan sampel. 4 tahapan penelitian pertama penghalusan rumput laut, kedua ekstraksi rumput laut dengan suhu 50°C selama 50 menit, ketiga centrifuge dengan kecepatan 400 RPM selama 40 menit, terakhir pengeringan rumput laut dengan suhu 50°C selama 24 jam. Hasil anilis didapatkan perlakuan terbaik dari sampel kabupaten karimun F1 yaitu Randemen 31,6%, kadar air 11,4%, kadar abu 11,4%, kadar abu tidak larut asam 0,80%, pH 8,1, kekuatan gel 158,4g/cm<sup>2</sup>, viskositas 192,7cP, logam berat arsen 6,09mg/kg, merkuri 0,04mg/kg, kadium 1,71mg/kg, timbal 1,12mg/kg. Hasil dari kabupaten lingga F4 Randemen 37,3%, kadar air 9,7%, kadar abu 10,9%, kadar abu tidak larut asam 0,69%, pH 8,2, kekuatan gel 168,3g/cm<sup>2</sup>, viskositas 54,0cP, logam berat arsen 3,30mg/kg, merkuri tidak terdeteksi, kadium 1,40mg/kg, timbal 0,67mg/kg.

Kata kunci: *Bead Mill Zirconium Beads*, Fisiko-kimia, Karagenan, Rumput Laut (*Kappaphycus alvarezii*)

## SUMMARY

MAHARANI. Optimization and Physico-chemical Analysis of Seaweed Carrageenan (*Kappaphycus alvarezii*) Using Bead Mill Zirconium Beads, Supervised by AIDIL FADLI ILHAMDY and R. MARWITA SARI PUTRI.

Carrageenan is a type of hydrocolloid polysaccharide with high economic value. Carrageenan obtained from *Kappaphycus alvarezii*, in particular, has broad potential due to its gel-forming ability. The extraction method being developed is the *Bead Mill Zirconium Beads* method. This study aims to determine the effectiveness of using *Bead Mill Zirconium Beads* as an alternative carrageenan extraction method, obtain optimal extraction concentrations, and analyze the physicochemical properties of *Kappaphycus alvarezii* seaweed carrageenan from Karimun and Lingga regencies. The research method used was a Completely Randomized Design (CRD) with two factors: variations in seaweed concentrations of 2%, 2.4%, 2.8%, and 3.2% (w/v) and differences in sampling areas. The first 4 stages of research are seaweed refining, the second is seaweed extraction at a temperature of 50°C for 50 minutes, the third is centrifuge at a speed of 400 RPM for 40 minutes, the last stage is drying the seaweed at a temperature of 50°C for 24 hours. The analysis results obtained the best treatment from the Karimun Regency F1 sample, namely 31.6% yield, 11.4% water content, 11.4% ash content, 0.80% acid insoluble ash content, pH 8.1, gel strength 158.4g/cm<sup>2</sup>, viscosity 192.7cP, heavy metals arsenic 6.09mg/kg, mercury 0.04mg/kg, cadmium 1.71mg/kg, lead 1.12mg/kg. Results from Lingga Regency F4 yielded 37.3%, moisture content 9.7%, ash content 10.9%, acid-insoluble ash content 0.69%, pH 8.2, gel strength 168.3g/cm<sup>2</sup>, viscosity 54.0cP, heavy metals arsenic 3.30mg/kg, mercury undetectable, cadmium 1.40mg/kg, lead 0.67mg/kg.

Keywords: Bead Mill Zirconium Beads, Physico-chemistry, Carrageenan, Seaweed (*Kappaphycus alvarezii*)