EFFECT OF STORAGE ON THE PHYSICOCHEMICAL PROPERTIES OF PACKED RAW DRIED SEAWEED (*Kappaphycus alvarezii*)

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I hereby declare that the material in this thesis is my own except for quotations, excepts, equations, summaries and references, which have been duly acknowledged.

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CERTIFICATION

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VIVA DATE	**:**	**10 AUGUST 2018**

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ABSTRACT

Semi-refined carrageenan (SRC) is important as hydrocolloid which acts as gelling agent, thickening agent, and a stabilizing agent in food and non-food product. Alkaline treatment is carried out to obtain the SRC from seaweed *Kappaphycus alvarezii*. Previously , storage studies was found that only *Glacilaria sp.* and *Gelidiella sp*. seaweed in wet condition were ever conducted. The objective of this study is to investigate the effect of storage on the quality like gel strength, viscosity and yield of dried seaweed *Kappaphycus alvarezii* to maintain for long period of storage. The various seaweed treatment methods will produce different quality of SRC. Similarly, the storage of dried seaweed is very important to guarantee the quality of SRC will be produced. Polyethylene (PE) used to pack the 300 g of dried seaweed for the purpose of storing in this study. There are two types of packaging that are studied, which is airtight packaging and porous packaging that are placed at different temperatures of 20^0C, 25^0C and 30^0C. Time for sample analysis is performed on the first day as quality control, day 7, 15, 30, 60, 90, and 120. The higher the storage temperature will cause mass of seaweed to decrease due to a reduction in the moisture content of seaweed. Similarly, porous packaging show more dramatic weight loss of seaweed than of airtight packaging. Nearly all the results show the gel strength, moisture content, percentage yield of SRC is stable after one month, fluctuates negligibly.

ABSTRAK

KESAN PENSTORAN TERHADAP SIFAT-SIFAT FISIKOKIMIA RUMPAI LAUT KERING (Kappaphycus alvarezii)

Karaginan Separa Tulen (SRC) adalah penting sebagai hidrokolloid yang bertindak sebagai agen pengelan, agen penebalan, dan agen penstabil dalam produk makanan dan bukan makanan. Rawatan alkali dijalankan untuk mendapatkan SRC dari rumpai laut Kappaphycus alvarezii. Kajian penyimpanan sebelum ini mendapati bahawa hanya Glacilaria sp. dan Gelidiella sp. iaitu rumpai laut dalam keadaan basah yang pernah dilakukan. Objektif kajian ini adalah untuk mengkaji kesan penyimpanan terhadap kualiti rumpai laut kering Kappaphycus alvarezii. Kaedah rawatan rumpai laut akan menghasilkan kualiti SRC yang berbeza. Begitu juga, simpanan rumpai kering sangat penting untuk menjamin kualiti SRC yang akan dihasilkan. Polietilena (PE) digunakan untuk membungkus 300 gram rumpai laut kering untuk tujuan penyimpanan dalam kajian ini. Terdapat dua jenis pembungkusan yang dipelajari, iaitu pembungkusan kedap udara dan pembungkusan berliang yang diletakkan pada suhu berbeza 20°C, 25°C dan 30°C. Masa untuk analisis sampel dilakukan pada hari pertama sebagai kawalan kualiti, hari 7, 15, 30, 60, 90, dan 120. Semakin tinggi suhu penyimpanan akan menyebabkan berat rumpai laut berkurang disebabkan kelembapan dalam kandungan lembapan rumpai laut berkurangan. Begitu juga, pembungkusan berliang yang menunjukkan penurunan berat rumpai laut secara mendadak berbanding pembungkusan jenis kedap udara. Hampir keseluruhan hasil menunjukkan kekuatan gel, kandungan lembapan, hasil peratusan SRC stabil selepas satu bulan yang hanya berbeza samada meningkat mahupun menurun.

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LIST OF ABBREVIATIONS

AOAC - Association of Analytical Communities
Ca^{2+} - Calcium Ion
cm - Centimeter
FTIR - Fourier Transform Infrared
g - Gram
GPC - Gas Permeation Chromatography
HPLC - High Performance Liquid Chromatography
K^{+} - Potassium Ion
KCl - Potassium Cloride
KOH - Potassium Hydroxide
MAP - Modified Atmosphere Packaging
Min - Minute
mL - Mililiter
OH^{-} - Hydroxyl Group
PE - Poly Ethylene
PNS - Philipines National Standard
RC - Refined Carrageenan
rpm - Revolution Per Minute
SNI - Indonesian National Standard
SO_4^{2-} - Sulphate Group
SRC - Semi Refined Carrageenan
w/v - Weight Per Volume

LIST OF SYMBOLS

α	-	alpha
β		beta
I	-	iota
κ	-	kappa
λ	-	lambda
μ	-	micro
°C	-	degree celcius
%	-	percent

LIST OF APPENDICES