

LEMBAR
HASIL PENILAIAN SEJAWAT SEBIDANG ATAU *PEER REVIEW*
KARYA ILMIAH : *PROSIDING**

Judul Prosiding (Artikel) : Carrageenan: Nutraceutical and Functional Food as Future Food
Nama Penulis : **Aji Prsaetyaningrum**, I R Praptyana, Nurfiningsih, Ratnawati
Jumlah Penulis : 4 orang
Status Pengusul : **Penulis Pertama**
Identitas Prosiding : a. Nama Prosiding : IOP Conference Series: Earth and Environmental Science
b. Nomor ISSN : 17551307, 17551315
c. Volume, Nomor, Bulan, Tahun : Vol. 292, No. 012068, 2019
d. Penerbit : IOP Science
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f. DOI artikel (jika ada) : doi:10.1088/1755-1315/292/1/012068
g. Terindeks : Scopus

Kategori Publikasi Makalah Ilmiah : ☒ Prosiding Forum Ilmiah International (terindeks SCOPUS)
(beri ✓ pada kategori yang tepat) ☐ Prosiding Forum Nasional

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Komponen Yang Dinilai	Nilai Reviewer		Nilai Rata-rata
	Reviewer I	Reviewer II	
a. Kelengkapan unsur isi artikel (10%)	3,0	3,0	3,0
b. Ruang lingkup dan kedalaman pembahasan (30%)	5,0	4,5	4,75
c. Kecukupan dan kemutakhiran data/informasi dan metodologi (30%)	5,0	6,0	5,5
d. Kelengkapan unsur dan kualitas terbitan/prosiding (30%)	7,0	6,5	6,75
Total = 100%	20,0	20,0	20,0
Nilai Pengusul (60% x nilai total)	12,0	12,0	12,0

Semarang,

Reviewer 2



Prof. Ir. Didi Dwi Anggoro., M. Eng., P.hD
NIP. 196711141993031001
Bidang Ilmu/Unit kerja : Teknik Kimia FT UNDIP

Reviewer 1



Prof. Dr. Moh. Djaeni, S.T., M.Eng
NIP. 197102071995121001
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Hasil Penilaian Peer Review :

Komponen Yang Dinilai	Nilai Maksimum Prosiding		
	Internasional ☒	Nasional ☐	Nilai Akhir Yang Diperoleh
a. Kelengkapan unsur isi artikel (10%)	3,0		3,0
b. Ruang lingkup dan kedalaman pembahasan (30%)	9,0		5,0
c. Kecukupan dan kemutakhiran data/informasi dan metodologi (30%)	9,0		5,0
d. Kelengkapan unsur dan terbitan/prosiding (30%)	9,0		7,0
Total = (100%)	30,0		20,0
Nilai Pengusul = (60% x 20,0) = 12,0			

Catatan Penilaian Artikel oleh Reviewer:

- **Kelengkapan unsur isi artikel (10%)**
Artikel ini membahas tentang fungsi karagenan sebagai nutraceutical dan functional food dan menyajikan data tentang struktur kimia dan sifat fungsional karagenan. Artikel disusun sesuai dengan format dan secara sistematis, terdiri dari Title, Abstract, Introduction, Material and methods, Results and Discussion serta Conclusion.
- **Ruang lingkup dan kedalaman pembahasan (30%)**
Artikel ini menyajikan pembahasan tentang sifat fisika dan kimia karagenan dan fungsinya sebagai nutraceutical dan functional food. Dilakukan analisa fisika dan kimia pada karagenan berat molekul tinggi dan berat molekul rendah. Pembahasan disajikan dengan jumlah acuan artikel yang kurang sebagai rujukan sebanyak 3 artikel dari 31 pustaka yang digunakan (9,6%). Data yang ditampilkan sangat sedikit, tidak sebanding dengan elaborasi pada pendahuluan, serta tahapan metode yang dilalui. Hasil penelitian kurang memberikan penguatan bagi pengembangan produk karaginan dan turunannya.
- **Kecukupan dan kemutakhiran data/informasi dan metodologi (30%)**
Kemutakhiran data atau informasi yang digunakan bersumber pada refferensi sepuluh tahun terakhir (>2010) sejumlah 17 artikel dari 31 artikel yang digunakan sebagai acuan pustaka atau (54,8%). Secara umum sebenarnya gagasan cukup memberikan nilai novelty yang baik. Metode disajikan dengan tahapan yang jelas.
- **Kelengkapan unsur dan terbitan/prosiding (30%)**
Artikel ini diterbitkan oleh IOP Conference Series: Earth and Environmental Science, No. ISSN: 17551307, 17551315. Penerbitan pada Vol. 292, No. 012068 tahun 2019. Paper ini memiliki nilai similaritas artikel berdasarkan turnitin sebesar 13%.

Semarang,

Reviewer 1



Prof. Dr. Moh. Djaeni, S.T., M.Eng

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	Internasional ☒	Nasional ☐	Nilai Akhir Yang Diperoleh
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f. Ruang lingkup dan kedalaman pembahasan (30%)	9,0		4,5
g. Kecukupan dan kemutakhiran data/informasi dan metodologi (30%)	9,0		6,0
h. Kelengkapan unsur dan terbitan/prosiding (30%)	9,0		6,5
Total = (100%)	30,0		20,00
Nilai Pengusul = (60% x 20,0) = 12,00			

Catatan Penilaian Artikel oleh Reviewer:

- **Kelengkapan unsur isi artikel (10%)**
Penulisan artikel disusun sesuai dengan panduan dan terstruktur dengan baik. Kelengkapan unsur artikel baik dan lengkap.
- **Ruang lingkup dan kedalaman pembahasan (30%)**
Ruang lingkup artikel cukup menarik yaitu membahas tentang fungsi karagenan untuk bahan nutraceutical dan pangan fungsional. Namun data yang disajikan masih kurang sehingga pembahasan kurang lengkap. Jumlah artikel yang dirujuk pada pembahasan sangat sedikit, yaitu 3 buah. Penjabaran untuk analisis data untuk melengkapi pembahasan kurang lengkap sehingga tidak menjelaskan perbedaan fungsi karagenan sebagai bahan nutraceutical dan pangan fungsional.
- **Kecukupan dan kemutakhiran data/informasi dan metodologi (30%)**
Metodologi yang dikembangkan cukup baik dan didukung oleh referensi cukup banyak yaitu sebanyak 31 artikel dan 17 artikel dari yang digunakan sebagai acuan pustaka merupakan referensi terkini. Penulisan metode cukup baik dan sistematis.
- **Kelengkapan unsur dan terbitan/prosiding (30%)**
Kelengkapan unsur dan terbitan baik. Similaritas artikel berdasarkan turnitin sebesar 13%. Publisher IOP Science memiliki reputasi yang baik. Artikel diterbitkan pada tahun 2019 pada volume 292.

Semarang,

Reviewer 2

Prof. Ir. Didi Dwi Anggoro., M. Eng., P.hD

NIP. 196711141993031001

Bidang Ilmu/Unit kerja : Teknik Kimia FT UNDIP



CERTIFICATE

Nomor : 7219/UN7.5.5/DL/2018

This is to certify that

Dr. Aji Prasetyaningrum, S.T., M.Si.

Has contributed as

Participant

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of Foods, Vegetables, and Fruits (ISPFVF) 2018**

Semarang, 18th October, 2018

Dean of Faculty of Animal and
Agricultural Sciences
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Prof. Dr. Ir. Mukh Arifin, M. Sc.
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2 messages

ISPFVF 2018 Committee <ispfvf@live.undip.ac.id>
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Fri, Feb 15, 2019 at 10:46 AM

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We would like to inform you that we have accepted your full paper and confirm your paper publication on ISPFVF Proceeding collaborate with IOP on International Conference on Food Science and Technology 2018 (ICFST). We would like to inform you that we need your payment confirmation to continue you paper publishing process into IOP. The latest of this payment are on **FEBRUARY 18, 2019**. Please send your filled confirmation and payment receipt to ispfvf@live.undip.ac.id

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Volume 292, Issue 1, 2019, Article number 012068

International Conference on Food Science and Technology 2018, ICFST 2018; Universitas Muhammadiyah Semarang Semarang; Indonesia; 28 November 2018 through 29 November 2018; Code 149235

Carrageenan: Nutraceutical and functional food as future food (Conference Paper)

[\(Open Access\)](#)

Prasetyaningrum, A. ✉, Praptyana, I.R., Nurfiningsih, Ratnawati 👤

Department of Chemical Engineering, Faculty of Engineering Diponegoro University, Jl Prof H. Soedarto SH, Tembalang, Semarang, 50275, Indonesia

Abstract

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Functional foods and nutraceuticals provide an opportunity to improve the human health, reduce health care costs and support economic development in rural communities. Global demand for macroalgal such as carrageenan is growing, and algae are increasingly being consumed for functional benefits beyond the traditional considerations of nutrition and health. Carrageenans are sulphated linear polysaccharides of D-galactose and 3,6-anhydro-Dgalactose extracted from certain red seaweeds of the Rhodophyceae class. They have been extensively used of carrageenan in the functional food industry as thickening, gelling and protein-suspending agents. Among marine resources, marine algae are valuable sources of structurally diverse bioactive compounds. The cell walls of marine algae are rich in sulfated polysaccharides (SPs) such as carrageenans in red algae. Therefore, marine algae derived SPs have great potential for further development as products in nutraceutical, pharmaceutical and cosmeceutical. The beneficial biological activities of low molecular of carrageenan such as anticoagulant, antiviral, antioxidative, anticancer and immunomodulating activities. This paper presents an overview of potential health of benefits of κ-carrageenan derived from marine algae. © 2019 Published under licence by IOP Publishing Ltd.

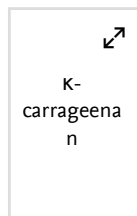
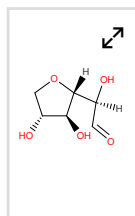
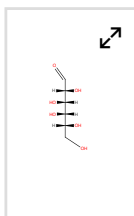
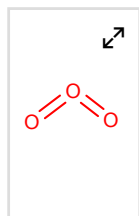
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INTERNATIONAL CONFERENCE ON
HEALT CIENCE JECHNOLOGY

INTERNATIONAL CONFERENCE ON
FOOD SCIENCE & TECHNOLOGY 2018

PROCEEDING



The Topic of 1st ICHESTECH – ICFST'18 is
“Current Trends and Future Perspectives in the Food Sector :
From Novel Concepts to Applications”

November 28-29th, 2018

Universitas Muhammadiyah Semarang
Indonesia

Held by :

Universitas Muhammadiyah Semarang (UNIMUS)
Jl. Kedungmundu Raya No. 18, Semarang
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PROCEEDING

**INTERNATIONAL CONFERENCE ON HEALTH, SCIENCE AND
TECHNOLOGY (ICHESTECH) 2018**

Theme :

**“Current Trends and Future Perspectives in the Food and Health Sector:
From Novel Concepts to Applications”**

Keynote Speaker I

Dr. Satoshi Futo Riztyan

FASMAC Co. Ltd, Japan

Keynote Speaker II

Prof. Eddy Yusuf, Ph.D.

Management & Science University, Malaysia

Keynote Speaker III

Najwa Santiworakun, Ph.D.

Chulalongkorn University, Thailand

Keynote Speaker IV

Prof. Fatchiyah, Ph.D.

Universitas Brawijaya, Indonesia

Wednesday, October 28th, 2018

Universitas Muhammadiyah Semarang, Semarang, Indonesia

Organized by :

**Research and Community Service Institute,
Universitas Muhammadiyah Semarang (UNIMUS)**

Welcome Message from the Conference Chair

Alhamdulillah, blessings and mercy from Allah SWT, the report on the implementation of the international conference called International Conference on Health, Science and Technology (ICHeSTech) could be completed.

Keynote speakers of the international conference were :

1. Prof. Eddy Yusuf, Ph.D from Management and Science University Malaysia;
2. Prof. Fatchiyah, M.Kes., Ph.D from Universitas Brawijaya Indonesia;
3. Dr. Satoshi Futo Riztyan from FASMAC Co. Ltd. Japan;
4. Najwa Santiworakun, M.Sc. from Chulalongkorn University, Thailand.

International Conference on Health, Science and Technology that was held in Universitas Muhammadiyah Semarang was collaborating between Universitas Muhammadiyah Semarang and Management and Science University Malaysia (MSU). So the International Conference was collaborating with IOP Conference Series Earth and Environment Science. It was the first **International Conference on Health, Science and Technology** series by Universitas Muhammadiyah Semarang (UNIMUS) **with co-host MSU** was held on **November 28-29th, 2018 at Semarang, Indonesia**. The theme was **International Conference on Food Science and Technology**. Sub-theme was **Current Trends and Future Perspectives in the Food Sector: From Novel Concepts to Applications**. The presence of highly affiliated personality's, food scientists, health researchers, entrepreneurs, technologists, student and more together to network, collaborate, share best practices to explore the future and trends in Food Science and Technology.

InsyaAllah, next year **International Conference on Health, Science and Technology** will be held on **Management and Science University Malaysia**.

To Rector Universitas Muhammadiyah Semarang Prof. Dr. Masrukhi, I will report that there are 120 participants in which 86 presenters those from within (some Universities from Sumatra, Kalimantan, Java and Sulawesi) and outside the country (from Japan, Equador, Thailand, Malaysia and Philipin).

To participants welcome and thank you to Universitas Muhammadiyah Semarang and God Bless followed the international conference. And I apologized if there were some mistakes. To the committee, I am proud of you and thank you very much on all of the activities so that the international conference could be held.

Finally, I thanked very much to everyone who involved it.

January 28th, 2019, Semarang

Sincerely,

Dr. Nurrahman, M.Si.

Conference Chair.

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Carrageenan: Nutraceutical and Functional Food as Future Food

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Abstract. Functional foods and nutraceuticals provide an opportunity to improve the human health, reduce health care costs and support economic development in rural communities. Global demand for macroalgal such as carrageenan is growing, and algae are increasingly being consumed for functional benefits beyond the traditional considerations of nutrition and health. Carrageenans are sulphated linear polysaccharides of D-galactose and 3,6-anhydro-D-galactose extracted from certain red seaweeds of the Rhodophyceae class. They have been extensively used of carrageenan in the functional food industry as thickening, gelling and protein-suspending agents. Among marine resources, marine algae are valuable sources of structurally diverse bioactive compounds. The cell walls of marine algae are rich in sulfated polysaccharides (SPs) such as carrageenans in red algae. Therefore, marine algae derived SPs have great potential for further development as products in nutraceutical, pharmaceutical and cosmeceutical. The beneficial biological activities of low molecular of carrageenan such as anticoagulant, antiviral, antioxidative, anticancer and immunomodulating activities. This paper presents an overview of potential health of benefits of κ -carrageenan derived from marine algae.

Keywords: Carrageenan, Nutraceuticals, Functional Food, Future food.

1. Introduction

Recently, there is an interest in nutraceutical and functional food that increase significantly. This is supported by recent invention to recognize the properties and potential application of nutraceutical substances, and added by balance in consumer demand and interest. Nutracritical is a combination of nutrition and pharmaceutical. This term means “any element which is categorically included as food or part of food that supply medical and health benefits, including the precaution and medication of disease”. The definition of functional foods are “foods or dietary components that may provide a health benefit beyond basic nutrition”[1]. Carrageenan is a carbohydrate (polysaccharide) that naturally get from edible red seaweeds. The term Carrageenan is obtained from the *Chondrus crispus* species of seaweed known as Carrageen Moss or Irish Moss in England, and Carraigin in Ireland. Carraigin was used in Ireland as a gelatin and as a coughs and colds medicine since 400 AD. This seaweed is mostly found along the coasts of North America and Europe. High molecular weight fraction (HMWF) of carrageenan is used in many mercantile applications or functional foods as gelling, stabilising agent, and thickening, as in meat, sauces, and other products. A side from this application, low molecular weight fraction (LMWF) of carrageenans are applied in nutracritical such as drug, cosmetic, pharmaceutical formula, and other industry. The molecular weight of carrageenan for nutraceutical application < 20 kDa[2].



Osmotic concentration of pineapple (*Cayenne lisse*) as a pre-treatment for convection drying

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Abstract. Osmotic dehydration as a pretreatment for convection drying is used with the purpose to get high quality dried foods. The effect of osmotic treatment at sucrose concentration of 40 °Brix and convection drying at 60 and 70 °C (air velocity of 0.8 m/s) were investigated. The quality of dehydrated pineapple was investigated by physicochemical properties, weight loss, textural characteristics, and sensorial parameters. Samples dried at 70 °C showed the fastest drying kinetics reached the required humidity at 2.5 hours. The sensory analysis allows establishing that the dehydrated pineapple at conditions of soluble solids of 40 °Brix, air temperature of the dryer at 70 °C be the best in acceptability in comparison with samples dried at 60°C. The samples were microbiologically safe for the consumer because they do not present a count of *Escherichia coli* and molds and yeasts.

Keywords: osmotic dehydration, drying kinetics, microbiological quality, bioactive compounds.

1. Introduction

Pineapple is considered one of the most important commercial fruit crops in the world, and a significant amount of its production is processing [1]. It is consumed as canned slices, chunks, dice, or fruit salads also in the preparation of juices, concentrates, and jams [2, 3]. This fruit is appreciated for its juiciness, taste, exceptional flavour and sugar-acid balance (12.48 °Brix – 0.93 g citric acid/100 gfw), vitamin C, vitamins of complex B, and diverse nutritional and health benefits [4-6]. Likewise, it is also rich in minerals as calcium, manganese, potassium, magnesium, iron as well as fibers [7, 8]. However of its importance and benefits tons of pineapple are lost because of the inefficient or none postharvest treatments, as well as to limited knowledge of processing technologies that allows controlling degradations produced by microorganisms or be affected by chilling injury, and others [9-11]. In this sense, there are some industrial processes which have been developed for their preservation [12]. Drying is the most common and traditional method in order to reduce water activity and weight, remove and inhibits microorganisms' growth and enzyme activity [13]. Literature reports different drying processes such as air drying by evaporation [14], freeze drying and others [15]. However, these treatments have been reported that there have different disadvantages in food such as hardening, shrinkage, poor rehydration ability, alteration of the sensory properties and cost that is necessary to remove water [14, 16].



A review of quality characteristics of solar dried food crop product

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Abstract. Sun drying is perhaps one of the oldest methods of food preservation that has been practiced for centuries. The direct usage of solar radiation which is renewable and abundant favours farmers that harvest and process at small quantity. As technology advances, an alternative to sun drying evolves to maximize the potential of solar radiation and this technology is known as solar drying. Solar drying has several inherent advantages over sun drying namely faster drying rate, better protection of products, reduce risk of prolonged drying, lesser risk of product spoilage and improvement in product quality. Various studies have reported the application of solar drying for fruits, vegetables, grains, seeds, beans, herbs, spices and medicinal plants. Product quality improvement is definitely associated with solar dried products as compared to sun dried and to some extent oven/hot air dried products. However, uptake of this technology especially among farmers in developing countries are still low despite the many years of research and technology advancement. Nonetheless, some successful application of solar drying have been reported in countries such as Indonesia, Laos, Zimbabwe, Tanzania, Brazil, Uganda, Kenya and Senegal.

Keywords: quality characteristics, solar dried, food crop

1. Introduction

Conventionally, most food crop products are dried using mechanical dryers that utilize convective hot air to dry the products to final content safe for storage. Food crop products are dried mainly for purposes such as storage and preservation, reduction in weight and volume, ease in transportation and reduction in spoilage and wastage. Solar drying is one of the alternatives to drying with aims to reduce dependency on fossil fuels and electricity in drying operation. Solar drying also helps to eliminate the disadvantages associated with natural sun drying such as prolonged drying duration, low drying throughput, contamination by foreign matters/debris, rewetting by rain droplets and low drying temperature (ambient condition). In recent years, solar drying have received much attention in agricultural sector owing to the following reasons:

- To substitute the scarce and expensive fossil fuels
- To improve quality of sun dried products



Anticancer potential of kebar grass (*Biophytum petersianum*), an Indonesian traditional medicine

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Abstract. *Biophytum petersianum* Klotzsch (kebar grass) has been used in Indonesia as traditional medicine. The objective of the current study was to evaluate the cytotoxic activity against several human cancer cells. The plants were collected from Purworejo, Central Java, Indonesia and extracted using methanol and dichlormethane. The extracts were analyzed for its antioxidant activity using DPPH (2,2 diphenyl-1-picrylhydrazyl) method. Cytotoxicity was examined against human acute lymphocytic leukemia cell (CCRF-CEM), multidrug resistance human acute leukemia cell (CEM/ADR5000), human cervical cancer cell (HeLa), human pancreatic carcinoma (Mia-PaCa2) and breast cancer cell (MCF-7) using colorimetric assay for assessing cell viability. The results indicated that methanol extract exhibited higher antioxidant activity as compared to dichlormethane extract. Both extracts exhibited moderate cytotoxicity against several human cancer cells, such as those of CCRF-CEM, CEM/ADR500, Mia-PaCa2 and MCF. This finding was the first report suggested that kebar grass from Purworejo, Central Java, Indonesia was potential as antioxidant and anticancer. Further comprehensive studies on the mechanism of actions are necessary to support this finding.

Keywords: anticancer potential, kebar grass, indonesian traditional medicine

1. Introduction

Currently, plant research has developed significantly around the world due to its potential to cure many diseases. Indonesia has been enriched with biodiversity, among which are medicinal plants. Their therapeutic potential has been evaluated against various diseases. It was provided mainly by its secondary metabolite content, which has been proven scientifically, providing basis in several traditional medicine system.

In recent time, the research has been shifted to find chemotherapeutic agents from natural products. Many plant species and their bioactive compound had anti carcinogenic and antiproliferative effects to inhibit the growth of human cancer cells such as lymphocytic leukemia, cervical cancer; pancreatic carcinoma and breast cancer. [1].





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13 October 2018

Dear Ms. Aji Prasetyaningrum
Indonesian Spice and Medicinal Crops Research

Re: Notification of Abstract Acceptance (ISPDFVF 2018)

Thank you for submitting your abstract to The 4th International Symposium on Processing and Drying of Foods, Vegetables and Fruits that will take place on 17-18 October 2018 at Semarang, Indonesia. Herewith, on behalf of the Organizing Committee, I am pleased to inform you that your abstract entitled “**CARRAGEENAN: NUTRACEUTICAL AND FUNCTIONAL FOOD AS FUTURE FOOD**” has been approved and accepted by the program committee.

Congratulation! I'm looking forward to seeing you at the conference.

Yours sincerely,

Dr Ahmad Ni'matullah Al-Baarri
Chair
Organizing Committee