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

Judul Karya Ilmiah (artikel)	:	Kinetics of Starch Degradation during Extrusion Cooking of Steady State Flow Konjac (Amorphophallus oncophyllus) Tuber Flour in a Single Screw Extruder.
Nama Penulis	:	Andri Cahyo Kumoro, **Diah S Retnowati**., Ratnawati Ratnawati
Jumlah Penulis	:	3
Status Pengusul	:	penulis kedua
Identitas Jurnal Ilmiah	: a. Nama Jurnal	: BCREC (Bulletin of Chemical Reaction Engineering & Catalysis)(Q3)
	b. Nomor ISSN	: e-ISSN :1978-2993
	c. Vol., No., Bln., Thn.	: vol 15 (2), p. 591-602, 2020
	d. Penerbit	: Universitas Diponegoro
	e. DOI artikel (jika ada)	: 10.9767/berec.8125.15.2.591-602
	f. Alamat web Jurnal	:
	g. Terindeks di	: Scopus (Q3). (SJR 2019 = 0,256), DOAJ dll

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- [√] ~~Jurnal Ilmiah~~ ~~Internasional~~/Internasional bereputasi*
- [ ] Jurnal Ilmiah Nasional Terakreditasi
- [ ] Jurnal Ilmiah Nasional/Nasional terindeks di DOAJ, CABI, COPERNICUS *

Hasil Penilaian *Peer Review* :

Komponen yang dinilai	Nilai Reviewer		Nilai rata-rata
	Reviewer 1	Reviewer 2	
a. Kelengkapan unsur isi artikel (10%)	4,00	4,00	4,0
b. Ruang lingkup dan kedalaman pembahasan (30%)	11,00	11,6	11,3
c. Kecukupan dan kemutakhiran data /informasi dan metodologi (30%)	11,00	11,2	11,1
d. Kelengkapan unsur dan kualitas terbitan/jurnal (30%)	12,00	11,2	11,6
Total (100%)	38,0	38,0	38,0
Nilai Pengusul (40% / 2 × total nilai)	7,60	7,60	7,60

Semarang, Agustus 2020

Reviewer 1.

Prof. Dr.Istadi, S.T., M.T.
NIP : 197103011997021001
Unit Kerja : Fak. Teknik Undip
Bidang Ilmu : Teknik Kimia

Reviewer 2

Prof. Dr. Tutuk Djoko Kusworo,S.T.,M.Eng
NIP : 197306211997021001
Unit Kerja : Fak. Teknik Undip
Bidang Ilmu : Teknik Kimia

LEMBAR

HASIL PENILAIAN SEJAWAT SEBIDANG ATAU *PEER REVIEW*

KARYA ILMIAH: JURNAL ILMIAH

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Jumlah Penulis	:	3 orang		
Penulis Jurnal Ilmiah	:	Andri Cahyo Kumoro,**Diah S Retnowati.**, Ratnawati Ratnawati		
Status Pengusul	:	~~Penulis pertama~~/penulis ke 2/~~penulis ketiga~~/~~penulis korespondensi~~		
Identitas Jurnal Ilmiah	:	a. Nama Jurnal Ilmiah	:	Bulletin of Chemical Reaction Engineering & Catalysis
		b. Nomor ISSN	:	e-ISSN :1978-2993
		c. Volume, nomor, halamanan, tahun	:	vol 15 (2), p. 591-602, 2020
		d. Penerbit	:	Diponegoro University
		e. DOI artikel (jika ada)	:	10.9767/bcrec.8125.15.2.591-602
		f. Alamat web Jurnal	:	https://ejournal2.undip.ac.id/index.php/bcrec/article/view/8125
		g. Terindeks di	:	Scopus, (Kategori: Q3; SJR 2019 = 0,256; CiteScore=1.6), DOAJ dll

Kategori Publikasi Jurnal Ilmiah (Beri ✓pada katergori yang tepat)	:	✓	Jurnal Ilmiah Internasional/internasional bereputasi
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			Jurnal Ilmiah Nasional/nasional terindeks di DOAJ, CABI, COPERNICUS

Hasil Penilaian *Peer Review*

Komponen yang dinilai		Nilai maksimum Jurnal Ilmiah			Nilai Akhir yang diperoleh
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a.	Kelengkapan unsur isi Artikel (10%)	4			4
b.	Ruang Lingkup dan kedalaman Pembahasan (30%)	12			11
c.	Kecukupan dan kemutahiran data informasi dan metodologi (30%)	12			11
d.	Kelengkapan unsur dan kualitas penerbit (30%)	12			12
	Total = (100%)	40			38,00
Nilai pengusul = (0,4 x 38,00)/2 = 7,60					

Catatan penilaian artikel oleh Reviewer:

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(b). Ruang Lingkup artikel jurnal sesuai dengan ruang lingkup yang ditetapkan jurnalnya. Pembahasan ditulis cukup mendalam walaupun belum secara molekular lengkap.
(c). Informasi temuan atau kontribusi cukup mutakhir dilengkapi dengan referensi yang mencukupi dan mutakhir. Metode penelitian juga cukup sesuai.
(d). Kelengkapan unsur dan kualitas penerbit bagus termasuk jurnal dengan kategori Q3.

Semarang, Juli 2020
Reviewer I

Prof. Dr. Istadi, S.T., M.T.
NIP : 197103011997021001
Unit kerja : Teknik Kimia/Universitas Diponegoro

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

Judul Karya Ilmiah (Artikel)	:	Kinetics of Starch Degradation during Extrusion Cooking of Steady State Flow Konjac (Amorphophallus oncophyllus) Tuber Flour in a Single Screw Extruder		
Jumlah Penulis	:	3 orang		
Penulis Jurnal Ilmiah	:	Andri Cahyo Kumoro,**Diah S Retnowati.**, Ratnawati Ratnawati		
Status Pengusul	:	~~Penulis pertama~~/penulis ke 2/~~penulis ketiga~~/~~penulis korespondensi~~		
Identitas Jurnal Ilmiah	:	a. Nama Jurnal Ilmiah	:	BCREC (Bulletin of Chemical Reaction Engineering & Catalysis)(Q3)
		b. Nomor ISSN	:	e-ISSN :1978-2993
		c. Volume, nomor, halamanan, tahun	:	vol 15 (2), p. 591-602, 2020
		d. Penerbit	:	Universitas Diponegoro
		e. DOI artikel (jika ada)	:	109767/bcrec.8125.15.2.591-602
		f. Alamat web Jurnal	:	https://ejournal2.undip.ac.id/index.php/bcrec/article/view/8125
		g. Terindeks di	:	Scopus, (SJR 2019 = 0,256), DOAJ dll

Kategori Publikasi Jurnal Ilmiah (Beri ✓pada katergori yang tepat) :

✓	~~Jurnal Ilmiah Internasional~~/internasional bereputasi
	Jurnal Ilmiah Nasional Terakreditasi/Nasional tidak terakreditasi
	Jurnal Ilmiah Nasional/nasional terindeks di DOAJ, CABI, COPERNICUS

Hasil Penilaian *Peer Review*

Komponen yang dinilai		Nilai maksimum Jurnal Ilmiah			Nilai Akhir yang diperoleh
		Internasional/International Bereputasi [40]	Nasional Terakreditasi [ ]	Nasional Tdk terakreditasi [10]	
a.	Kelengkapan unsur isi Artikel (10%)	4			4
b.	Ruang Lingkup dan kedalaman Pembahasan (30%)	12			11,6
c.	Kecukupan dan kemutahiran data informasi dan metodologi (30%)	12			11,2
d.	Kelengkapan unsur dan kualitas penerbit (30%)	12			11,2
	Total = (100%)	40			38
Nilai pengusul = 0,2 x 38 =7,6					

Catatan Penilaian oleh Reviewer:

a. Kelengkapan unsur isi paper (10%)
Artikel memiliki unsur lengkap (Introduction, Material & Methods, Results & Discussion, Conclusions, Acknowledgement, References). Isi artikel sesuai dengan bidang ilmu penulis, yaitu Teknik Kimia. State of the art, tujuan dan kesimpulan dinyatakan dengan jelas. Pengecekan plagiarism dengan Turnitin menunjukkan similaritas sebesar 21 %. (nilai = 10 %)

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Bulletin of Chemical Reaction Engineering & Catalysis (BCREC) merupakan jurnal internasional bereputasi yang dikelola dengan baik. yang diterbitkan oleh Universitas Diponegoro dengan ISSN 1978-2993. BCREC ini merupakan jurnal yang terideks pada Scopus dengan SJR 2017 = 0,26 . Editorial Board terdiri dari pakar-pakar yang berasal dari berbagai negara. Penulis berasal dari berbagai Negara. Penulisan di tiap artikel di dalam jurnal ini konsisten. (nilai = 28%)

Semarang, 1 Agustus 2020
Reviewer II

Prof. Dr. Tutuk Djoko Kusworo, S.T., M.Eng.
NIP : 197306211997021001
Unit kerja : Teknik Kimia/Universitas Diponegoro

Source details

Bulletin of Chemical Reaction Engineering and Catalysis

Open Access

Scopus coverage years: from 2009 to Present

Publisher: Diponegoro University

ISSN: 1978-2993

Subject area: Chemical Engineering: Chemical Engineering (miscellaneous) Chemical Engineering: Process Chemistry and Technology Chemical Engineering: Catalysis

CiteScore 2019
1.6

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Bulletin of Chemical Reaction Engineering & Catalysis

Volume 15, Issue 2, Year 2020 (Regular Issue: August 2020)

Available online since 30th July 2020 at: *https://bcrec.id*

Bull. Chem. React. Eng. Catal.	Vol. 15	No. 2	Pages: 290 - 603	Semarang, August 2020	e-ISSN: 1978-2993

Published by:

Department of Chemical Engineering, Diponegoro University

Masyarakat Katalis Indonesia – Indonesian Catalyst Society (MKICS)

Available online at BCREC website: https://bcrec.id

Bulletin of Chemical Reaction Engineering & Catalysis, 15 (2), 2020, i

EDITORIAL TEAM

AIMS AND SCOPE

Bulletin of Chemical Reaction Engineering & Catalysis, a reputable international journal, provides a forum for publishing the novel technologies related to the catalyst, catalysis, chemical reactor, kinetics, and chemical reaction engineering. Scientific articles dealing with the following topics in chemical reaction engineering, catalysis science, and engineering, catalyst preparation method and characterization, novel innovation of chemical reactor, kinetic studies, etc. are particularly welcome. However, articles concerned on the general chemical engineering process are not covered and out of the scope of this journal.

This journal encompasses Original Research Articles, Review Articles (only selected/invited authors), and Short Communications, including: fundamentals of catalyst and catalysis; fundamentals of chemical reaction engineering; kinetics studies of chemical reaction engineering; materials and nano-materials for catalyst; photocatalyst and photocatalysis; chemistry of catalyst and catalysis; applied chemical reaction engineering; applied catalysis; applied bio-catalysis; applied bio-reactor; membrane bioreactor; chemical reactor design (not process parameter optimization); catalyst regeneration; catalyst deactivation; surface chemistry of catalyst; bio-catalysis; enzymatic catalytic reaction (not process parameter optimization); kinetic studies of enzymatic reaction (not process parameter optimization); the industrial practice of catalyst; the industrial practice of chemical reactor engineering; application of plasma technology in catalysis and chemical reactor; and advanced technology for chemical reactors.

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PUBLICATION INFORMATION

Bulletin of Chemical Reaction Engineering & Catalysis (e-ISSN: 1978-2993).
Short journal title: ***Bull. Chem. React. Eng. Catal.***

For year 2020, 3 issues (Volume 15, Issue 1 (April), Issue 2 (August), and Issue 3 (December)) are scheduled for publication with 23-30 articles per issue. Commencement of publication: January 2008.

Bulletin of Chemical Reaction Engineering & Catalysis, initialized as BCREC, is published freely open access of fulltext PDF articles via journal website (https://bcrec.id). The BCREC journal is published by Department of Chemical Engineering, Diponegoro University jointly with *Masyarakat Katalis Indonesia* - Indonesian Catalyst Society (MKICS).

The BCREC journal has been indexed and abstracted by: Elsevier Products (Scopus, Compendex/Engineering Village), Web of Science (Emerging Source Citation Index) by Clarivate Analytics, Chemical Abstract Services, CABI, ASEAN Citation Index, DOAJ, Digital Dimensions, Microsoft Academics, and other reputable indexers.

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Available online at BCREC website: https://bcrec.id

Bulletin of Chemical Reaction Engineering & Catalysis, 15 (2), 2020, ii

JOURNAL CITATIONS AND IMPACT FACTOR ANALYSIS (2020)

* Journal Impact Factor in Scimago (2019) : SJR = 0.256; SNIP = 0.808
* H-index in Scimago (2019) : 14 (2019)
* Scopus ID : 19900191860
* CiteScore (2019) : 1.6
* CiteScore Scopus Tracker (per 7 July 2020) : 1.8
* Google Scholar (h-index / h5-index / i10-index) : 22 / 19 / 70
* Google Scholar Citation (total) : 2528
* Google Scholar Citation (5 years) : 2147

Profile of BCREC in SCIMAGO JOURNAL RANKING

Bulletin of Chemical Reaction Engineering and Catalysis

Scopus coverage years: from 2009 to Present
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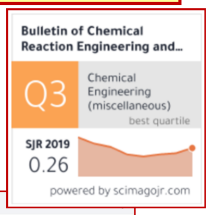

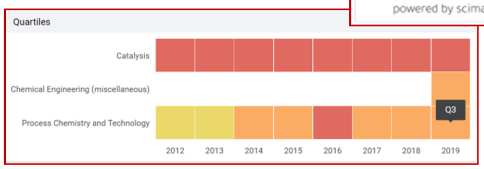

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Publisher: Diponegoro University; ISSN: 1978-2993
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Journal Impact Factor (JIF) Tracker on Web of Science Data per 18 March 2020
Number of articles (2017-2018) : 122 articles
Citation in 2019 to articles of 2017-2018 : 130 citations
Tracking Journal Impact Factor (JIF) 2019: 130/122 = 1.066
h-index of documents (2017-2018) : 6
Average Citations per item of documents (2017-2018) : 1.78

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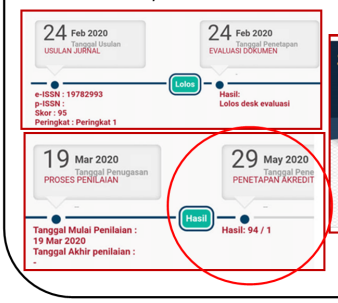

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Publisher: Diponegoro University
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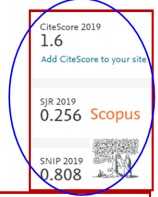

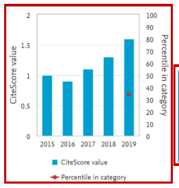

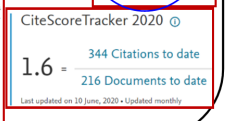

INDEXING AND ABSTRACTING

Bulletin of Chemical Reaction Engineering & Catalysis (e-ISSN: 1978-2993) has been covered (indexed and abstracted) by following indexing services:

1. Scopus - (Elsevier)
2. EI-Compendex - Engineering Village
3. EnCompassLIT - Engineering Village
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9. ProQuest (Fulltext) Databases
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For detail please visit here: https://ejournal2.undip.ac.id/index.php/bcrec/pages/view/indexing.

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Bulletin of Chemical Reaction Engineering & Catalysis, 15 (2) 2020, 591-602

Research Article

Kinetics of Starch Degradation during Extrusion Cooking of Steady State Flow Konjac (*Amorphophallus oncophyllus*) Tuber Flour in a Single Screw Extruder

Andri Cahyo Kumoro[1,2,*], Diah Susetyo Retnowati[1], Ratnawati Ratnawati[1]

[1]*Department of Chemical Engineering, Faculty of Engineering, Universitas Diponegoro, Semarang 50275, Indonesia.*
[2]*Institute of Food and Remedies Biomaterials (INFARMA), Department of Chemical Engineering, Faculty of Engineering, Universitas Diponegoro, Semarang 50275, Indonesia.*

Received: 11th June 2020; Revised: 19th July 2020; Accepted: 20th July 2020; Available online: 30th July 2020; Published regularly: August 2020

Abstract

The presence of glucomannan in Konjac (*Amorphophallus oncophyllus*) tuber flour has promoted its various applications, especially in the food, drink, drug delivery and cosmetics. Starch is the main impurity of Konjac tuber flour. Although the common wet refining method may result in a high purity Konjac tuber flour, it is very tedious, time consuming and costly. This research aimed to study the kinetics of starch degradation in the extrusion cooking process of dry refining method to produce high quality Konjac tuber flour. In this research, Konjac tuber flour with 20% (w/w) moisture was extruded in a single screw extruder by varying screw speeds (50, 75, 100, 125, 150 and 175 rpm) and barrel temperatures (353, 373, 393, 413 and 433 K). The results showed that the starch extrusion cooking obeys the first reaction order. The reaction rate constant could be satisfactorily fitted by Arrhenius correlation with total activation energy of 6191 J.mol^{-1} and pre-exponential factor of 2.8728×10^{-1} s^{-1}. Accordingly, thermal degradation was found to be the primary cause of starch degradation, which shared more than 99% of the energy used for starch degradation. Based on mass *Biot* number and *Thiele modulus* evaluations, chemical reaction was the controlling mechanism of the process. The results of this research offer potential application in Konjac tuber flour refining process to obtain high quality flour product.

Keywords: dry process; extrusion cooking; starch; reaction kinetics; glucomannan; refining

How to Cite: Kumoro, A.C., Retnowati, D.S., Ratnawati, R. (2020). Kinetics of Starch Degradation during Extrusion Cooking of Steady State Flow Konjac (*Amorphophallus oncophyllus*) Tuber Flour in a Single Screw Extruder. *Bulletin of Chemical Reaction Engineering & Catalysis*, 15 (2), 591-602 (doi:10.9767/bcrec.15.2.8125.591-602)

Permalink/DOI: https://doi.org/10.9767/bcrec.15.2.8125.591-602

1. Introduction

Due to its specific rheological and gelling properties, Konjac (*Amorphophallus oncophyllus*) flour is commonly used as a thickener, emulsifier, gelling agent, and stabilizer in many types of food, drink and cosmetic products [1]. This is because Konjac flour is rich in glucomannan content (50 to 70% w/w) and being a sustainable resource [2]. A premium quality konjac tuber flour should contain no less than 90% (w/w) of glucomannan. The impurities present in the crude Konjac tuber flour are usually orig-

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Available online at BCREC website: https://bcrec.id

Bulletin of Chemical Reaction Engineering & Catalysis, 15 (2) 2020, 348-366

Research Article

One-Pot Access to Diverse Functionalized Pyran Annulated Heterocyclic Systems Using SCMNPs@BPy-SO_3H as a Novel Magnetic Nanocatalyst

Ke Chen[1,*], Guangzu He[1], Qiong Tang[1], Qahtan A. Yousif[2]

[1]*Hunan Polytechnic of Enviroment and Biology, Hunan, 421005, China.*
[2]*University of Al-Qadisiyah, College of Education, Department of Chemistry, Republic of Iraq.*

Received: 10th December 2019; Revised: 18th March 2020; Accepted: 24th March 2020; Available online: 30th July 2020; Published regularly: August 2020

Abstract

The SCMNPs@BPy-SO_3H catalyst was prepared and characterized using Fourier Transform Infrared Spectroscopy (FTIR), Thermogravimetric Analysis (TGA), Vibrating Sample Magnetometry (VSM), Energy Dispersive X-ray Spectroscopy (EDX), X-ray Diffraction (XRD), and Scanning Electron Microscopy (SEM). Afterwards, its capability was efficiently used to promote the one-pot, three-component synthesis of pyrano[2,3-*c*]pyrazole and 2-amino-3-cyano-pyrano[3,2-*c*]chromen-5(4*H*)-one derivatives. The strategy resulted in the desired products with excellent yields and short reaction times. The SCMNPs@BPy-SO_3H catalyst was readily recovered using a permanent magnetic field and it was reused in six runs with a slight decrease in catalytic activity.

Keywords: Multicomponent reaction; Solvent-free conditions; Magnetic nanocatalyst; SCMNPs@BPy-SO_3H, pyrano[2,3-*c*]pyrazole; 2-amino-3-cyano-pyrano[3,2-*c*]chromen-5(4*H*)-one

How to Cite: Chen, K., He, G., Tang, Q., Yousif, Q.A. (2020). One-Pot Access to Diverse Functionalized Pyran Annulated Heterocyclic Systems Using SCMNPs@BPy-SO_3H as a Novel Magnetic Nanocatalyst. *Bulletin of Chemical Reaction Engineering & Catalysis*, 15(2), 348-366 (doi:10.9767/bcrec.15.2.6693.348-366)

Permalink/DOI: https://doi.org/10.9767/bcrec.15.2.6693.348-366

1. Introduction

In the last decade, considerable attention has been paid to the synthesis of Fe_3O_4 magnetic nanoparticles (MNPs) in various fields of applications due to their unique features, such as: high surface area, superparamagnetic behavior, low toxicity, biocompatibility, suitability for large-scale generation, simple recovery, and coupling with organic and inorganic molecules [1-9]. Coating an organic (biowastes) or inorganic (bentonite, alumina, silica, zeolite, and metal oxides) support surface on MNPs prevents these nanomaterials from agglomeration due to the strong dipole-dipole attraction; it also improves their efficiency in terms of catalytic activity and simplify separation [10-11]. Surface modifying of Fe_3O_4 magnetic nanoparticles with silica layer growth the available active sites and ameliorate the chemical stability [12]. Furthermore, because of the presence of active hydroxyl groups on the silica surfaces, a wide range of organic and inorganic linkers can be attached to them and promote their application in many chemical processes.

* Corresponding Author.
E-mail: chenkechina@126.com (K. Chen)

Available online at BCREC website: https://bcrec.id

Bulletin of Chemical Reaction Engineering & Catalysis, 15 (2) 2020, 379-389

Research Article

Immobilised *Chlorella vulgaris* as An Alternative for The Enhancement of Microalgae Oil and Biodiesel Production

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Received: 25th December 2019; Revised: 4th April 2020; Accepted: 6th April 2020; Available online: 30th July 2020; Published regularly: August 2020

Abstract

Microalgae are a promising alternative for biodiesel production and a valuable source of fatty acid methyl ester (FAME). In this research, *Chlorella vulgaris* has been chosen as the suitable microalgae because this species was able to produce highest oils for biodiesel processing. Previously, sodium alginate (SA) was used to entrap the microalgae in the culturing process due to its low toxicity and high transparency. However, SA have some disadvantages such as bead disruption which leading to the loss of microalgae cell. Therefore, this research has been conducted to evaluate the oil production of immobilised *Chlorella vulgaris* using different matric systems at different ratios which are 0.3:1, 1:1, and 2:1. Currently, six matric systems have been developed, they are SA as a control, a combination of SA and chitosan (SA+CT), SA and carrageenan (SA+CR), SA and gelatin (SA+GT), SA and calcium alginate (SA+CA), and SA and sodium carboxymethylcellulose (SA+CMC). The microalgae was first cultivated, harvested and extracted to produce oil, prior to use in the transesterification process. The SA+GT showed the highest oil yield with 59.14% and a total FAME of 0.56 mg/g. The FAME profile of oil extracted microalgae showed high potential for biodiesel production as it consisted of palmitic acid (C16:0), stearic acid (C18:0), oleic acid (C18:1), linoleic acid (C18:2) and linolenic acid (C18:3). The results proved that the combination of SA+GT had improved the oil yield and fatty acid composition as compared to the other matric systems, which may have useful application for the biodiesel industry.

Keywords: *Chlorella vulgaris*; Immobilised; Oil yield; Matric systems; Biodiesel; Microalgae

How to Cite: Rushan, N.H., Mat Yasin, N.H., Said, F.M., Ramesh, N. (2020). Immobilised *Chlorella vulgaris* as An Alternative for The Enhancement of Microalgae Oil and Biodiesel Production. *Bulletin of Chemical Reaction Engineering & Catalysis*, 15(2), 379-389 (doi:10.9767/bcrec.15.2.6905.379-389)

Permalink/DOI: https://doi.org/10.9767/bcrec.15.2.6905.379-389

1. Introduction

In the current situation, air pollution are the biggest challenge due to the consumption of fossil fuels. Reducing the use of fossil fuels would reduce the amount of carbon dioxide and other pollutants being produced [1,2]. Renewable energy is a promising alternative solution because it can fix CO_2 in the atmosphere through photosynthesis [3-5]. Biodiesel production have become one of the alternative source of renewable energy due to the lubricating nature and eco-friendly fuel produced from various feedstock [6,7]. Based on the fuel problem scenario, aquatic microorganisms such as microalgae have been suggested as an alternative feedstock for bio-

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