

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

Judul Karya Ilmiah (artikel) : Microbial Detoxification of Gadung (*Dioscorea hispida* Dennst) Chips: Effect Microbes Loading and Time.
 Nama Penulis : Andri Cahyo Kumoro, Ratnawati Ratnawati, **Diah S Retnowati.**, Catarina Sri Budiyati
 Jumlah Penulis : 4
 Status Pengusul : penulis ketiga
 Identitas Jurnal Ilmiah : a. Nama Jurnal : Malays. Appl. Biol (Q3)
 b. Nomor ISSN : 01268643
 c. Vol., No., Bln., Thn. : Volume 49(2), p. 105-110, 2020
 d. Penerbit : The Malaysian Society of Applied Biology
 e. DOI artikel (jika ada) :
 f. Alamat web Jurnal :
https://uabjournal.com/images/49_2_July_2020/49_02_16.pdf
 g. Terindeks di : Scopus (Q4), SJR =0.13 (2019).

Kategori Publikasi Jurnal Ilmiah (beri tanda pada kategori yang tepat)

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d. Kelengkapan unsur dan kualitas terbitan/jurnal (30%)	11,00	10,1	10,7
Total (100%)	37,00	34	35,5
Nilai Pengusul (40% = 3 x total nilai)	4,93	4,53	4,73

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

Judul Karya Ilmiah (Artikel) : Microbial Detoxification of Gadung (*Dioscorea hispida* Dennst) Chips: Effect Microbes Loading and Time

Jumlah Penulis : 3 orang

Penulis Jurnal Ilmiah : Andri Cahyo Kumoro, Ratnawati Ratnawati, Diah Susetyo Retnowati, Catarina Sri Budiayati

Status Pengusul : Penulis pertama/penulis ke 3/penulis korespondensi

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c. Volume, nomor, bulan, tahun : Volume 49(2), p. 105-110, 2020

d. Penerbit : the Malaysian Society of Applied Biology

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d. Kelengkapan unsur dan kualitas penerbit (30%)	12			11
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Nilai pengusul = (0,4 x 37,00)/3 = 4,93				

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- (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 cukup bagus walaupun website nya masih menggunakan Joomla (kurang cocok untuk jurnal ilmiah) termasuk jurnal dengan kategori Q4 (2019).

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 (Artike) : Microbial Detoxification of Gadung (*Dioscorea hispida* Dennst) Chips: Effect Microbes Loading and Time

Jumlah Penulis : 4 orang, penulis ketiga dari 4 penulis

Penulis Jurnal Ilmiah : Andri Cahyo Kumoro, Ratnawati Ratnawati, **Diah Susetyo Retnowati**, Catarina Sri Budiayati

Status Pengusul : Penulis pertama/penulis ke 3/penulis-korespondensi

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a. Kelengkapan unsur isi Artikel (10%)	4			3,2
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c. Kecukupan dan kemutakhiran data informasi dan metodologi (30%)	12			10,4
d. Kelengkapan unsur dan kualitas penerbit (30%)	12			10,4
Total = (100%)	40			34
Nilai pengusul = $0,4/3 \times 34 = 4,53$				

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- a. Kelengkapan unsur isi artikel (10%) Secara umum penulisan artikel ini memiliki unsur yang lengkap, akan tetapi tidak dinyatakan secara langsung, seperti tidak ada abstrak. Kemudian bagian pendahuluan, material, metode maupun pembahasan dan kesimpulan juga tidak menjadi sub bagian tersendiri, walaupun artikel ini juga mengandung hal tersebut. Penulisan daftar pustaka dan in-text citation konsisten dan sesuai dengan petunjuk penulisan. Hasil cek plagiarisme dengan Turnitin menunjukkan kesamaan sebesar 12%. (nilai = 8 %)
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Semarang, Juli 2020
Reviewer II

A handwritten signature in black ink, appearing to read 'Tutus', written in a cursive style.

Prof. Dr. Tutuk Djoko Kusworo, S.T., M.Eng.
NIP : 197306211997021001
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Malaysian Applied Biology
Volume 49, Issue 2, July 2020, Pages 105-110

Microbial detoxification of gadung (*Dioscorea hispida* dennst) chips: Effect of microbes loading and time (Note)

Ratnawati, R., Retnowati, D.S., Budiyati, C.S., Kumoro, A.C. ✉ 👤

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

Abstract

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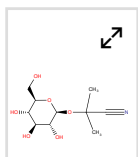
SciVal Topic Prominence ⓘ

Topic: Manihot | Cassava Flour | Linamarin

Prominence percentile: 78.722 ⓘ

Chemistry database information ⓘ

Substances



Funding details

Funding sponsor	Funding number	Acronym
Kementerian Riset, Teknologi dan Pendidikan Tinggi	185-03/UN7.5.1/PG/2016	

Funding text

The authors thank the Ministry of Research, Technology and Higher Education of the Republic of Indonesia for its financial support through National Strategic Research Grant under contract No. 185-03/UN7.5.1/PG/2016.

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ISSN: 0126-8643

Subject area: [Agricultural and Biological Sciences: General Agricultural and Biological Sciences](#)

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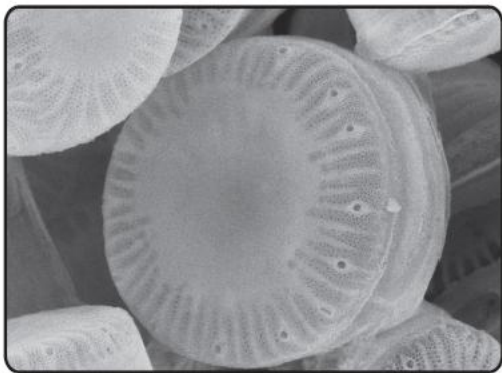
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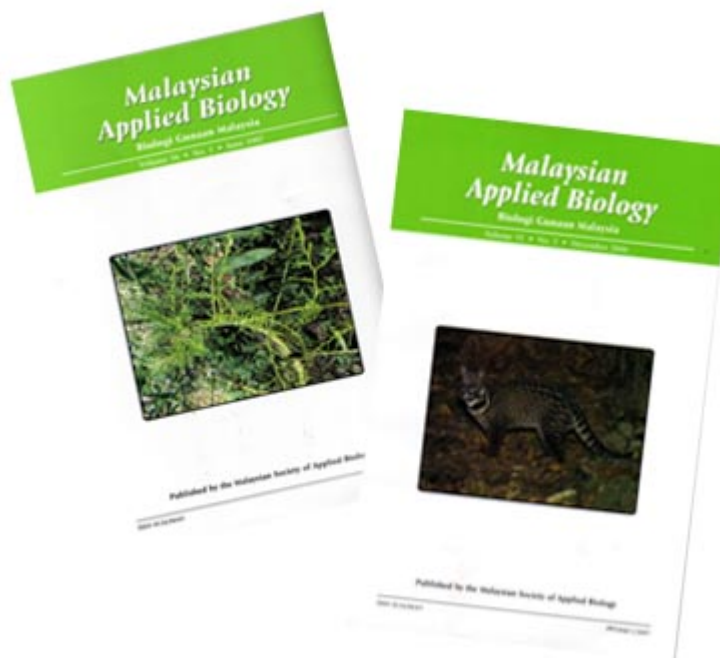
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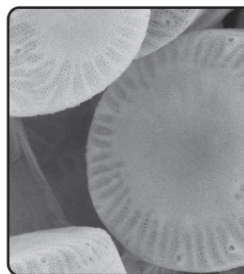
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MALAYSIAN APPLIED BIOLOGY (ISSN 0126/8643)

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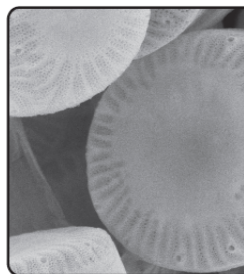
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Volume 49(2): July 2020**Journal of the Malaysian Society of Applied Biology**

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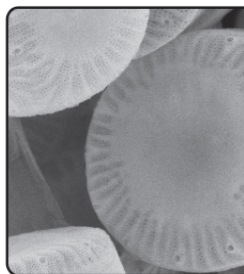
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MICROBIAL DETOXIFICATION OF GADUNG (*Dioscorea hispida* Dennst) CHIPS: EFFECT OF MICROBES LOADING AND TIME

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Accepted 26 April 2020, Published online 6 July 2020

Gadung (*Dioscorea hispida* Dennst.) is an underused tuber grown in various parts of Southeast Asia and its neighbouring islands. The countryside people in this area use this carbohydrate rich tuber as staple food after boiling, steaming or frying, while some others make it into flour, cakes, pancakes and porridge (Ashri *et al.*, 2014). The resistant starch of this tuber allows a sluggish digestion and results in a slow glucose release and absorption in human gastrointestinal tract that drives its potential use in lowering the risk of obesity, diabetes and related diseases (Aprianita *et al.*, 2009). Being gluten free, this tuber offers great capacity to reduce the prevalence of celiac disease and some allergic reactions (Rekha & Padmaja, 2002).

The major issues related to the underutilisation of gadung tuber as a food source for human consumption comes from its high cyanide level (Edijala *et al.*, 1999). Cyanogenic glycosides (CG) present in this tuber are the precursors for the release of highly toxic free cyanide via hydrolysis during food processing (Akintonwa *et al.*, 1994). Hence, preventing gadung tubers from hydrolysis will let the CG remain stable and the foods produced from this tuber are safe for consumption. Consumption of foods bearing high level of cyanogens may induce cyanides poisoning with symptoms of nausea, diarrhoea, stomach pains, vomiting and other acute intoxications (Akintonwa *et al.*, 1994; Mlingi *et al.*, 1992). Bourdox *et al.* (1982) reported that daily consumption of food products with unsafe cyanogens level may lead to chronic cyanides toxicity and aggravate goitre, while in severe conditions, it induces paralytic diseases (Tylleskar *et al.*, 1992). Indeed, cyanogens and their derivatives must be removed from the food sources to make the foods safe for consumption.

An efficient processing technique is expected to reduce cyanogens level in food materials, below the safe level of 10 mg hydrocyanic acid (HCN) equivalent per kg dry matter set by world health organisation (WHO) (Mlingi *et al.*, 1995). Traditionally, Malaysians detoxify gadung tuber by boiling, roasting or soaking in flowing water for 7 – 14 days (Hudzari *et al.*, 2011), whereas their Thai counterparts remove the cyanogens from the tuber by peeling, slicing, soaking in flowing water for up to 7 days or soaking in daily changed salted water for up to 5 days and drying. Then, the dried tuber chips are hydrated, boiled or steamed before consumption (Tattiyakul *et al.*, 2012). Meanwhile, Indonesians detoxify gadung tuber via a knotty process involving peeling, slicing, smearing with ash from firewood combustion, pressing, drying, soaking in flowing water for 2 days, steaming and drying to obtain edible dry tuber chips (Sunarsih *et al.*, 2007). Some other detoxifications of gadung tuber include soaking in saline water, repetitive soaking in water for 3–5 days, and boiling (Harijono *et al.*, 2008).

Aspergillus niger or *Panus trigimus* as inoculum has been used in solid state fermentation for detoxification and degradation of toxic cyanogens in cassava peels to produce poultry feed (Purwadaria, 2014; Behera & Ray, 2017). Padmaja & Balagopal (1985) fermented cassava tuber and peels using a mixed culture inoculum for 72 hrs to effectively remove the cyanogens and leave total bound cyanide of about 24 to 26% and 15 to 33%, respectively. The high activity β -glucosidase from *Saccharomyces cerevisiae* NCIM 3186 has been harnessed to reduce cyanogens in sorghum juice and solution media by 84.58% and 85.72% (Bokanga, 1995; Panda & Ray, 2016). Similarly, Eustace and Dorothy (2000) also reported a cyanide reduction of 76.69% in cassava peels by *Saccharomyces*

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