

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

Judul Jurnal Ilmiah (Artikel) : Improvement of the potency of microalgae *Nannochloropsis* and *Chaetoceros* through antioxidant analysis and optimization of DNA isolation.

Penulis Jurnal Ilmiah/ Jumlah penulis : M I Zulkarnain, H T Rahayu, A P Herida, T Erfianti, H P Kusumaningrum*, M Zainuri, H Endrawati, I Widowati, W D U Haryanti, R T Mahendrajaya / 10 orang

Status Pengusul : Penulis Anggota

Identitas Jurnal Ilmiah :

- a. Nama Jurnal : Journal of Physics: Conference Series
- b. Nomor ISSN : 17426588, 17426596
- c. Volume, nomor, bulan, tahun : 1943 012079
- d. Penerbit : IOP Publishing Ltd.
- e. DOI artikel : <https://doi.org/10.1088/1742-6596/1943/1/012080> (jika ada)
- f. Alamat web jurnal : <https://iopscience.iop.org/article/10.1088/1742-6596/1943/1/012080/pdf>
- g. Terindeks di SCOPUS, Q4, SJR 2021 0.21, H Indeks 85

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Nilai pengusul = (40% x 29,69) = 11,876			11,876

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Semarang, 27 April 2023

Reviewer I



Prof Dr. Endah Dwi Hastuti, MSi.

NIP. 196105051986032003

Unit kerja : Departemen Biologi Fakultas Sains dan Matematika Universitas Diponegoro Semarang

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b. Ruang lingkup dan kedalaman pembahasan (30%)	9		8,70
c. Kecukupan dan kemutakhiran data /informasi dan metodologi (30%)	9		9,00
d. Kelengkapan unsur dan kualitas terbitan/jurnal (30%)	9		9,00
Total = (100%)	30		29,70
Nilai pengusul = (40% x 29,70) = 11,88			11,88

Catatan penilaian oleh reviewer:

- Kesesuaian dan kelengkapan unsur isi jurnal:** Penulisan sudah sesuai dengan "Author Guidelines" (Title, Abstract, Introduction, Methods, Results and Discussion, Conclusion, Acknowledgement, References). Naskah lengkap publikasi mempunyai format lengkap dan struktur penulisan baik. Substansi artikel sesuai bidang ilmu pengusul/penulis. Ada benang merah dalam struktur penulisannya (skor= 3,00)
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Semarang, 28 April 2023

Reviewer II



Prof. Dr. Tri Retnaningsih Soeprbowati, M.App.Sc.

NIP. 196404291989032001

Unit kerja : Departemen Biologi Fakultas Sains dan Matematika Universitas Diponegoro Semarang

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Preface

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The 10th International Seminar on New Paradigm and Innovation on Natural Science and Its Application (10th ISNPINSA)

“Developing Innovations and Challenges in Science And Technology For Better Living”

September 24-25, 2020

PREFACE

The International Seminar on New Paradigm and Innovation of Natural Sciences and its Application (ISNPINSA) is an annual conference organized by the Faculty of Sciences and Mathematics (FSM), Diponegoro University (UNDIP), Semarang, Central Java, Indonesia. This seminar has been successfully conducted since 2011 and therefore becoming an annual event since then. This annual ISNPINSA has been intensively achieved high level improvement in strengthening the collaboration between scientists either from Indonesia or other countries, stimulating a new research partnership, and contributing to formulating policies to increase the important roles of science for the community.

The 10th ISNPINSA was held on September 24-25, 2020 with the theme of “DEVELOPING INNOVATIONS AND CHALLENGES IN SCIENCE AND TECHNOLOGY FOR BETTER LIVING”. Due to the outbreak of COVID-19, the conference process was carried out virtually using licensed Zoom media. The presentations were categorized into two terms, which were plenary presentation and parallel presentation. Keynote speakers were invited to deliver their expertise and research findings at the plenary presentation and each had given 1 hour of speech. While invited speakers together with all parallel presenters delivered their presentation in parallel session with time of speech including Q&A for each of 15 minutes.

The number of participants of the seminar were 313 including 7 keynote speakers, 5 invited speakers, presenters and non-presenters coming from various institutions of various countries consist of researchers, lecturers, postgraduate and undergraduate students from various universities. There were 263 papers presented in this seminar and after the review process, there are 199 articles to be published in the present conference proceeding. All published articles remain the sole responsibility of the author for the content of the paper.

We would like to take this opportunity to extend our appreciation to all keynote speakers and invited speakers for their valuable presentation. We also would like to thank all the authors for submitting and presenting their papers to our conference, the Organizing Committee members and the supporting staff for their hard work, as well as all the Scientific & Editorial Committee and the reviewers for their constructive recommendations and critical comments helped to improve of the submitted papers. All these contributions eventually make the 10th ISNPINSA 2020 a successful and fruitful event.

The 10th ISNPINSA 2020 Organizing Committee hopes you will enjoy reading this JPCS volume.

The Chairman,

Nor Basid Adiwibawa Prasetya, S.Si., M.Sc., Ph.D

PREFACE • The 10th ISNPINSA 2020



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3. Dr. Ahmad Suseno, M.Si., *Diponegoro University, Indonesia*
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
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Spintronic terahertz emission from Ni/Pt bilayer grown on MgO

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Abstract. Spintronic THz emission from Ni/Pt bilayer grown on MgO is reported based on the novel THz emitter using metallic structures. The Ni metal was deposited first on a MgO substrate and capped with a thin Pt metal via electron beam deposition. The THz emission data was obtained using a standard terahertz time-domain spectroscopy setup using a Ti: sapphire laser excitation source. Initial measurements were done using 800nm excitation with 7 mW and 185 mW pump powers under upward and downward magnetic field orientations. Polarity reversal of the terahertz signal was observed upon changing the orientation of the magnetic field. Maximum amplitude was found at 0.5 THz with bandwidth up to ~6 THz. A saturation fluence of 85.04 mJ/cm² was calculated from the pump fluence-dependence plot of the THz peak-to-peak signal. The results are consistent with the spintronic THz emission due to the inverse spin-Hall effect and provide insights for future development and optimizations.

1. Introduction

Terahertz (THz) radiation, or electromagnetic radiation in general, has been known to be generated when charge carriers accelerate [1]. This has been utilized in THz emission of materials, especially in semiconductors which main mechanisms are by drift-related current and/or diffusion-related current [2,3]. To optimize these mechanisms, different methods have been employed, such as varying dopant concentrations [2], low-temperature growths [4], epitaxial layer designs [5], and quantum structures [6]. Fabrication techniques have also been implemented like the photoconductive antenna (PCA) designs which accelerate excited electrons from one electrode to another in the presence of an electrical bias [7].

Recently, a different THz mechanism was reported by Kampfrath et al., which involves the spin property of the electrons [9]. This opens up spintronics, or spin electronics, in the THz research or possibly vice-versa. The designed emitter source consists of a ferromagnetic, FM, and nonmagnetic, NM, (FM/NM) metal thin film heterostructure. This emitter utilizes the inverse spin-Hall effect (ISHE), a phenomenon that converts the spin current (coming from the FM material) into a transient transverse



The effect of coconut sap amount and salt texture on the protein content and total bacterial number in *ina sua*

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Abstract. *Ina sua* is a salted-fermented fish made traditionally by the Teon-Nila-Serua community in the Maluku islands, Indonesia. In addition to salt, ‘sageru’ (coconut sap) is often added in *Ina sua* production. This study aims to find out the effect of coconut sap amount and salt texture on the protein content and the number of bacteria in the skipjack-*Ina sua*. This study used a complete randomized design with 3 treatments and 3 replications for each experiment. For coconut sap effect experiment, the amount of coconut sap used were 10 ml/100g fish, 30 ml/100g fish, and 50 ml/100g fish with 30% salt (a mixture of fine and coarse salt). For the salt texture experiment, 30 % coarse salt, 30% fine salt, and a mixture of fine salt (15%) and coarse salt (15%) with 30 ml coconut sap /100g fish were used. The mixtures were incubated at room temperature for two weeks. Analysis of variance and Tuckey test were used to analyse the data. The results show that the amount of coconut sap has a significant effect on the protein content, total bacterial number, and pH in *Ina sua*, while salt texture has significant effect only on the protein content in *Ina sua*.

1. Introduction

Ina sua is a fermented-salted fish made traditionally by the Teon Nila Sarua (TNS) community, Central Maluku, Indonesia. The fish is also called by the community as *Inmama* or *Ina skua*. It is made as a source of protein in time where fresh fish is not available in sufficient quantities. Many kinds of fish are used to make *Ina sua*, including skipjack (*Katsuwonus pelamis*).

In addition to salt, ‘sageru’ (coconut sap) is often added to improve the shelf life of *Ina sua* and to obtain *Ina sua* with a certain taste and aroma. The microbes which are responsible for the fermentation process are originated from the fish themselves, coconut sap, and salt. The quantity of both salt and coconut sap and also the incubation time used to make *Ina sua* are varied among the community, which leads to the different quality of *Inasua* produced by the community. *Ina sua*’s production is still carried out at a household level without any quality control. There is no standard procedure available so far to make *Ina sua*.

Ina sua has been studied by some researchers. Mahulette *et al* [1] isolated and characterized bacteria from *Ina sua* taken directly from TNS community and found that the *Ina sua* contained total bacterial numbers of 3.5×10^5 to 2.8×10^7 CFU/g. They also found that cocci-lactic acid bacteria (LAB) are the predominant bacteria in the *Ina sua*. LAB such a *Bacillus* sp., *Propionibacterium* sp., *Leuconostoc* sp., and *Lactobacillus* sp., *Lactococcus* sp., and *Pediococcus* sp were found in the products of fermented salt fish, including *Ina sua* [1][2][3][4]. Besides lactic acid bacteria, coliform bacteria were also found in *Ina sua* [5].



Investigation of a method for creating neonatal chest phantom using 3D printer

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Abstract. Newborns and children are more sensitive to radiation and have a longer life expectancy than adults. Therefore, efforts should be made to reduce unnecessary exposure by optimizing the dose when conducting radiological examinations. In order to optimize the dose in neonatal X-ray examinations, we studied a method to create inexpensive and precise neonatal chest heterogeneous anthropomorphic phantoms using a 3 dimensional (3D) printer. Phantoms were created by constructing segments of computed tomography (CT) volume data acquired from the chest of a 6-month-old, excluding the bone and lung tissue, using 3D image analysis software. The material used for 3D printing was polylactic acid; multiple printing densities were investigated. Gypsum and urethane foam were used as bone- and lung-equivalent substances. The CT values of the lung tissue in the phantom were almost the same as those of the air, and those of the bone tissue showed a range of CT values dependent on the print density. By visual evaluation, it was established that the shapes of the original lungs and heart were reproduced in the images of the phantom. The creation of an inexpensive and precise neonatal chest phantom using a 3D printer is useful.

1. Introduction

Radiology is widely used as the basis of medical diagnosis and treatment because of its usefulness. However, strict control is required to minimize ionizing radiation exposure and the related risks. If the radiation dose is too low, disease may be difficult to diagnose and therapeutic effects may be reduced. Moreover, too high a dose may not only impair proper diagnosis and treatment but also causes unnecessary exposure. The International Commission on Radiological Protection (ICRP) recommends the justification and optimization of radiation diagnostics [1]. In addition, the use of diagnostic reference levels (DRLs) as guidelines for patient dose is recommended to promote protection in radiology [2]. A DRL indicates a particular radiation dose in a standard-type radiological examination that serves as a guide for the standardization of imaging conditions at individual facilities. DRLs are set worldwide [3-6].

While efforts are being made to reduce medical radiation exposure in general, this is especially true for newborn and infant exposure. Very young children are more radiosensitive than adults and have a longer life expectancy, which inevitably increases the risk of carcinogenesis. Thus, infant and newborn radiation exposure requires more attention than that of adults. Regarding data on medical exposure, various measured values, estimated values, and indicators have been published in the literature, but there is perhaps insufficient information on general radiography, fluoroscopic examination, and computed tomography (CT) examination of newborns and infants [7-15]. Human body phantoms for newborns and infants are commercially available for radiographic practice. However, dosimeters cannot be



***Solanum lycopersicum* and *Daucus carota*: effective anticancer agents (a mini review)**

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Abstract. The high cost, scarce availability, and some extraneous side effects of some pharmaceuticals have diverted the majority's mindset towards the use of nutraceuticals as both prophylactic and therapeutic alternatives. The cancer incidence in the low and middle-income countries has risen due to several factors, but notably, it has been due to poverty and the non-availability of screening centers. The non-toxic nature, high availability, and low cost of food-based nutraceuticals have been a significant advantage to its users. *Solanum lycopersicum* is well-known to possess excellent antioxidant, anti-inflammatory, and anticancer potential, and this has been attributed to its potent bioactive compound, lycopene. The presence of β -carotene in *Daucus Carota* has also contributed immensely to its antioxidant and anticancer properties. Nutraceuticals are considered suitable for anticancer drug development due to their pleiotropic actions on target sites with multiple effects. This short review has explored the dietary characteristics, bioactive components and mild anticancer effects of tomatoes and carrots.

1. Tomatoes (*Solanum lycopersicum*)

Tomatoes (*Solanum lycopersicum*) has sailed high to become one of the world's most recognized vegetables. It has long been in global recognition as one of the most essential vegetable with high antioxidant activity. This juicy vegetable originated from the western South America, with a wide range of different diversities of wild tomatoes recorded in Peru [1]. Tomatoes were placed in the genus *Solanum* as *Solanum lycopersicum* by Carolus Linnaeus in 1753. Two years later, but this was modified by another researcher Philip Miller (1754), who felt the need to integrate the other species of tomatoes in the genus hence he came up with a new genus, *Lycopersicon* [2]. *Lycopersicon esculentum* Mill was coined to accommodate tomatoes and its several species. The different species of *Solanum* are found to be present on all temperate and several tropical continents, which is attributed to their morphological and ecological diversity. Tomato is known to be the third most vital and highly nutritious vegetable cultivated in the world, and also, it battles with banana for the most consumed fruit in the world [3]. It is an edible red fruit berry with a well-seeded ovary. The fruit colour varies from green to yellow, which further projects into yellow to orange then to red based on the maturity stage. In most cases, the quality of carotenoids embedded in the fruit determines the colour of tomatoes. Carotenoids such as lycopene, chlorophylls, and β -carotene are liable for the colour of the fruit [4]. The red and orange colours of tomatoes are attributed to the quantity of the lycopene and β -carotene, respectively. The fruit's green

