29 & 30 July 2019
Puri Setiabudhi Residence
Bandung-Indonesia

ABSTRACT BOOK

ICFB 2019

International Conference on Food and Bio-Industry

Indonesia Towards Leading Agroindustry in Local Wisdom-Based Food and Bioenergy Sovereignity

Indonesian Association of Food Technologist (IAFT) in collaboration with
Indonesian Agroindustry Association (AGRIN)

Organized by

Supported by

ICFB 2019

INTERNATIONAL CONFERENCE ON FOOD AND BIO-INNDUSTRY

INDONESIAN ASSOCIATION OF FOOD TECHNOLOGIST (IAFT)
IN COLLABORATION WITH
INDONESIAN AGROINDUSTRY ASSOCIATION (AGRIN)

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Welcome Adress
President of IAFT

Distinguished ladies and gentlemen,

It is of my pleasure to welcome you all in this event. This event – **International Conference on Food and Bioindustry (ICFB-2019)** is held by the Indonesian Association of Food Technologists (IAFT/*PATPI*) hosted by IAFT Bandung Branch, in collaboration with AGRIN and supported by the Faculty of Agroindustrial Technology Universitas Padjajaran and others.

Seminar, conference or scientific forum is a tradition held by professional organizations like IAFT and AGRIN. IAFT has been running national and international seminar every year intermittently during the past, however in this year we conduct an international instead of national conference since we have a good opportunity to have a collaboration with AGRIN that it might be expected to be able to extend the scope of the conference and to get greater output and outcome from this valuable event. This is also as an effort to make our professional association go global.

It is much appropriated I think, that Organizing Committee of ICFB has set the scope of this conference comprising 3 parts, *i.e.* Food, Bioenergy, and Special theme of Sustainable Development Goal's (SDG's) and Halal Industry. About the first part, Postharvest Technology, Food Diversification, Functional Foods, Food Safety are four aspects that are very relevant and matching with the mission of IAFT.

It is a great event, indeed, because besides plenary and technical sessions the Conference also provides other agendas such as Patpi annual meeting, IAFT/PATPI Award, Food Exhibition and Food Business Forum.

May I take this opportunity to express my deep gratitude to AGRIN, Universitas Padjadjaran, to all speakers and moderators. A special gratefulness goes to Mr Oded Muhammad Danial – Major of Bandung City for facilities and hospitality, and also to sponsors that have made this Conference realized. High appreciation is granted to PATPI Cabang Bandung, the Chairman and members of Organizing Committee for their hard work to realise this enormous event.

To all participants, congratulations, thank you very much for joining and participation, I wish you have a fruitful success in this Conference.

Thank you.

Umar Santoso

President of IAFT/*PATPI*

Welcome Address
President of AGRIN

The mission of the Indonesian Agroindustry Association (AGRIN) is to promote agro-industry as the driving force of economic growth and equity in the era of globalization, through active participation as mediator, facilitator and accelerator of sustainable agroindustrial development in Indonesia. In line with this mission, AGRIN in collaboration with PATPI (Indonesian Food Technologist Association) held the International Conference on Food and Bio-Industry (ICFB 2019): "Indonesia Towards Leading Agroindustry in Local Wisdom-Based Food and Bioenergy Sovereignty" in Bandung, July 29-30, 2019. We consider that the theme of this conference is timely important and strategic as a forum for sharing ideas, results of research / innovation, knowledge and experience for students, academicians, professionals and practitioners to contribute in facing challenges in the field of bio-based industry. It is expected to contribute to the development of national agroindustry, and push forward Indonesia towards " a Superior Agro-Industry Countries".

I would like to take this opportunity to express my deep appreciation to the conference's committee members both from AGRIN and PATPI for their hard work and contribution throughout this conference. I also would like to thank authors, reviewers, speakers, and session chairs for their supports and contributions in the conference. We would like to express our special thanks to the Department of Aroindustrial Technology - Padjajaran University, as a member of AGRIN, for the supports in organising this conference.

We hope that the conference can be a means for various parties to contribute in promoting Indonesia as a leading country in the field of agroindustry and realizing food and

renewable energy sovereignty. Finally, hopefully all of us got the prosperous benefit from this conference.

Sincerely,

Prof. Dr. Ir. Anas M. Fauzi, MEng.

Chairman of AGRIN

BOOK OF ABSTRACT

KEYNOTE

SUSTAINABLE DEVELOPMENT GOALS NATIONAL AND REGIONAL READINESS OF INDONESIA

Zuzy Anna

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Abstract. Sustainable development goals (SDGs) is formally a relative new and ambitious developmental strategy adopted by UN member states in September 2015, with the aim of justice and a better life for all or no left behind. SDGs also expect to transform the way countries develop in the foreseeable future. The 2030 Agenda for sustainable development includes 17 aspirations for intergovernmental goals with 169 targets and 232 Indicators. This is quite an immense task that could not be achieved without global partnership, national and local multi-stakeholders, including academia. SDGs address a wide scope of issues, from economy, social and biosphere. Limited resources, especially in developing countries such as Indonesia require the need to prioritize the goals, targets and indicators to be achieved. To be able to understand these priorities, an understanding of preparedness at the national and regional levels is needed regarding the baseline conditions for achieving SDGs targets. The study of baseline conditions can examine the extent to which SDGs targets can be achieved by national or regional. In addition, it can also map in what areas of SDGs and which sub national need greater attention. Indonesia is struggling in achieving SDGs in 2030, since almost more than a quarter of the indicators tested, the projection of the baseline or business as usual are a quarter or half way from the SDGs target. At the regional level is also challenging with different priorities, but there are no Provinces or Cities in Indonesia that are immune to the challenges of the SDGs. Provinces that are left behind in almost all dimensions are Papua, West Papua, Sulawesi except South Sulawesi, NTT, Sumatra (Aceh, Bengkulu, Lampung). Provinces rich in natural resources such as Riau Islands and East Kalimantan are at the forefront of almost all dimensions even above Java, but not Papua. While Java, facing the problem of inequality and environment. Goals 2 that specifically targeted to the food security and sovereignty, represented by stunting, still an issue in the level of national and sub national. SDGs are a serious challenge to global development as well as Indonesia. Business-as-usual future development is far from guaranteeing the SDGs target will be achieved in 2030. Therefore, extra-hard, innovative and out-of-the-box (non-BAU) efforts are needed if we are serious about achieving the SDGs target in 2030.

MARINE FISH PARASITES: ECOLOGICAL ROLE, FISH HEALTH, HUMAN IMPACTS AND HANDLING RELATED TO FISHERIES AND FOOD SAFETY

Sonja Kleinertz

IPB Bogor, Faculty of Fisheries and Marine Sciences

Abstract. The presentation deals with the ecological role of marine fish parasites and the impact on their hosts. Fish parasites are a mostly neglected part of the marine biodiversity and use marine food-web linkages for their transfer, throughout all trophic levels. They have certain impacts on their hosts health as well as on the hosts population dynamics and can trigger pathogenic effects to their hosts. This effects can cause mass mortalities as well as reduced fish meat quality and a lower reproduction success within the fish host and therefore within fisheries and fisheries production. Furthermore fish parasites are known to harbor the risk of being ´zoonotic´, that means diseases can be transferred to humans after consumption of under- or uncooked fish filets, such as the disease ´Anisakiasis` caused by the roundworms of the genus Anisakis. This lead to their role in food safety in fisheries products. Finally, some `easy to follow` handling advises for consumers, as well as within fisheries industry, and aquacultures to reduce parasite burdens, will be presented.

HOW AGRICULTURE CAN ACHIEVE THE GOAL FOR FOOD AND ENERGY SOVEREIGNTY

Nobutaka Ito

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Abstract. The author conducted experimental research how to improve the situation of rice agriculture and promote mechanization under Japanese wetland based condition. He purchased secondhand bulldozer and used for collecting small parcels into large parcels removing the partition between small parcels of paddy field under the total same area within the territorial border, therefore the total number of small parcel paddy field were collected and drastically reduced for making large size parcel. He tried to introduce direct sowing method instead of popularly accepted transplanting one from the perspective of reducing energy and massive material handling. Automatic water irrigation pump station was also set for time and labor saving under the accurate, precise control of operation time. Size up of paddy field parcel make possible and easier to introduce riding type mobile farm machineries like tractor and combine. He tried to promote bulldozer farming instead of wheel type tractor farming from the viewpoint of merit for assuring the better trafficability under irrigated muddy condition and additional use of bulldozer for farmland reclamation. Combine equipped with direct de-husking function was newly proposed, however still not commercialized yet due to some minor problems to negotiate. Nowadays most of the agricultural machines are robotized equipped with ICT equipment and GPS navigation control system. Some of the industry is going to promote bulldozer farming based on direct sowing of rice.
In this paper the content consisting of the importance of irrigated wetland farming is better and needed for stable yield production, the condition to satisfy under competitive market, the necessity of farming scale up per farmer (family), the targeting goal shown by government are discussed. Then the new direction which way agriculture should go is discussed and predicted based on the author's long term experience focusing on direct sowing, combine equipped with direct de-husking and the possibility of introducing track type tractor.

SPICE UP - GEODATA FOR SUSTAINABLE PEPPER FARMING: CASE PEPPER FIELD AT BANGKA BELITUNG, LAMPUNG, WEST KALIMANTAN, AND EAST KALIMANTAN

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Abstract. Pepper (*Piper nigrum* L.) is one of the potential agricultural commodities that has made a real contribution as GDP, employment providers, industrial raw materials, and sources of income for farmers. In the past, Indonesia was the leading producer and exporter of black and white pepper in the world. However, in recent years, Indonesia has lost its leading position to Vietnam. Many factors have contributed to the decline in production. For example, instability of price, climate change and pepper farmer's lack of knowledge on Good Agricultural Practices, resulting in low productivity, plant diseases, and difficulties with water supply. In order to tackle those problems, a multinational partnership project called Spice-Up was formed, funded by NSO and consisting of eight public and private organizations (IPB, Ballitro, PT.CAN, Verstegen, ICCO, N&S, AKVO, VanderSat). Spice-Up aims to implement a financially sustainable information service based on geodata and precision agriculture that supports 100,000 Indonesia pepper farmers to increase their production, income, food security and reduce the inputs of water, fertilizer, and pesticides. This project will have three types of data source: Satellite data (soil moisture maps, rain forecast, drought index), field data (soil test, GAP, farm characteristics, farmer demographics), and open data. At the pre-processing phase, all the data will be checked, corrected, and structured. After the data processed, analysed, and modelled, the data sets translated into understandable information for farmers, visually on maps or summarized in graphs/tables as: 1.Fertilizer advice; 2.Pest and disease advice; 3.Good Agricultural Practice; 4.Drought advice; 5.Sustainability tracing system.

Keywords: *agriculture, geodata, pepper, sustainable, precision agriculture*

CARBON EMISSION REDUCTION INITIATIVE IN FOOD AND AGRO-INDUSTRY: CHALLENGES AND OPPORTUNITIES

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Abstract. As a concrete form of commitment under the Paris Agreement, Indonesia has ratified the Paris Agreement and submitted the First Nationally Determined Contribution (NDC) Report to the United Nations Convention on Climate Change (UNFCCC) in 2016. In the NDC, Indonesia stated the commitment to contribute to GHG emission reduction in 2030 is 29% with own efforts and up to 41% if there is international cooperation from conditions without action. The timeframe for the first (first) commitment period of the NDC implementation begins in 2020 and regularly updates once every five years thereafter in accordance with the Paris Agreement. For this reason, a monitoring effort is needed that covers the time frame for 2017-2019 (pre-2020) and year 2020-2030 (post-2020). The commitment of the Indonesian government is certainly not only carried out by the Indonesian government through ministries / institutions but it must involve all parties because it will be a national contribution to unity. Thus the challenge to produce products that generate a lower carbon emissions need to be a concern. Although based on Law Number 3 of 2014 concerning Industry, the industry has regulated the application of the principles of green industry with the aim of preserving environmental functions, but Indonesia does not yet have a scheme to reduce carbon emissions for food products and agroindustry. Therefore, labelling low-carbon products in Indonesia is an opportunity to improve comparative advantage and competitive advantage of the products. For this reason, Carbon Emission Reduction initiative through policy, research, education, incentives and forward-looking relationships with industry in food and agro-industry are needed, because the agricultural and industrial sectors contribute the most carbon emissions.

Keywords: *GHG emission, sustainability, food and agroindustry, low carbon initiative, Paris agreement*

PEMBERDAYAAN PETANI MELALUI BUDIDAYA TANAMAN SEHAT RAMAH LINGKUNGAN BERKELANJUTAN BERBASIS KEARIFAN LOKAL "ORGANIC SYSTEM OF RICE INTENSIFICATION"

Alik Sutaryat

Pengembang SRI Organik

Abstrak. Upaya peningkatan produksi padi senantiasa terus dilakukan, melalui berbagai introduksi inovasi teknologi, namun demikian dibeberapa tempat produksi sulit meningkat, beberapa factor penyebab kondisi tersebut, diantaranya: menurunnya kesehatan dan kesuburan tanah, proses budidaya yang belum memberikan kesempatan penuh pada tanaman padi untuk berkembang sesuai potensinya dan intensitas serangan hama penyakit tanaman yang semakin meningkat.

Degradasi kualitas lahan yang diakibatkan oleh penggunaan bahan agrokimia, terutama pupuk anorganik dan pestisida dalam jangka panjang dan berlebihan dapat menimbulkan kerusakan fisik, kimia dan biologi tanah. Penggunaan pupuk organic sangat diperlukan untuk memperbaiki kualitas tanah, terutama yang terkait dengan keberlangsungan aliran energy, siklus nutrisi dan keragaman mahluk hidup lainya yang bermanfaat bagi pertumbuhan dan peningkatan produktivitas tanaman.

Tanaman padi sebenarnya mempunyai potensi yang besar untuk menghasilkan produksi dalam tarap tinggi, hal ini dapat dicapai jika terpenuhinya kondisi yang mendukung secara optimal untuk pertumbuhannya, yakni proses pengelolaan yang memadai antara unsur tanah, tanaman, air dan keragaman biota. Dalam prakteknya megedepankan pemanfaatan potensi local melalui optimalisasi sumberdaya (sumberdaya Manusia, Sumberdaya alam, sumberdaya ekonomi, sumberdaya social dan sumberdaya infra strutur), sehingga implementasi program mengacu pada wacana ekologi untuk masyarakat sesuai dengan jiwa pembangunan pertanian sehat ramah lingkungan berkelanjutan

Keutamaan muatan SRI organik lebih ditekankan pada proses pemahaman dan penyadaran, hal ini didasarkan pada pengalaman bahwa keyakinan dari diri sendiri lebih kuat dorongannya untuk melakukan pengembangan kegiatan usahatani, tahapan diawali dengan assesment, pertemuan persiapan, pembelajaran ekologi, yang dilanjutkan dengan pendampingan, kenyataan dilapangan proses dan tahapan tersebut memotivasi tumbuhnya harapan warga belajar, selain terbangunnya minat dan niatnya, tahapan selanjutnya membongkar kebekuan pikiran warga belajar, juga terbangunnya cara pandang tentang usahatani yang sehat ramah lingkungan berkelanjutan.

SRI organic ini terbukti banyak manfaat yang diperoleh, diantaranya ; dapat menghemat penggunaan air, memperbaiki kualitas lingkungan/ekosistem sawah, menghemat biaya usahatani, meningkatkan produktivitas dari 4-6

ton perhektar menjadi 7 – 10 ton perhektar, memanfaatkan bahan-bahan organic, sekaligus menyelesaikan persoalan sampah, menumbuhkembangkan kearifan local dan meningkatkan pendapatan usahatani, membangun dan mengembangkan kemandirian, selain bertani sehat ramah lingkungan berkelanjutan.

PRODUCTION OF RENEWABLE BIOENERGY FROM OIL PALM BIOMASS

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Abstract. Currently million hectares of land in Malaysia and Indonesia are occupied with oil palm plantation generating huge quantities of biomass such as fronds, trunks, empty fruit bunch (EFB), shells, fiber and palm oil mill effluent (POME). In this context, oil palm biomass become the most abundant and bio-renewable resource with great potential for sustainable production of chemicals and biofuels. Thus, this lecture aims to present current scenario of biomass in Malaysia and Indonesia covering issues on availability and sustainability of feedstock as well as current and possible utilization of oil palm biomass. This lecture will also discuss feasibility of some biomass conversion technologies and some ongoing projects in Malaysia related to utilization of oil palm biomass as a source of renewable energy. With these advantages, both Malaysia and Indonesia should position themself in the right path for fully utilizing oil palm biomass as a source of renewable energy.

SECTION FOOD

Diversification of Food Product

FPO-1-2-22

EFFECT OF α-*amylase* HYDROLYSIS IN NAGARA BEAN GRITS FROM SPONTAN FERMENTATION ON GELATINIZATION PROFILE AND IN VITRO STARCH DIGESTIBILITY

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Abstract. Treatment of α amylase digestion in wet grits nagara bean after spontenous fermententation was assessed to determine changes in rehydration ability, gelatinization profile and in vitro starch digestibility of the flour produced, this is important for further processed products that require easy hydration in cold water and high starch digestibility. This research was carried out by hydrolysis of α-amylase with 60 IU enzyme activity as much as 0.1% on wet grits nagara beans from spontaneous fermentation which had been soaked in $NaHSO_3$ and $Ca(OH)_2$ for 1 hour, α-amylase digestion is carried out at 37 °C for 30, 60 and 90 minutes. The results showed that the amylose content of nagara bean flour from the pre treatment soaking using $Ca(OH)_2$ was relatively higher than the pre treatment of $NaHSO_3$, and there was a tendency for amylase digestion up to 90 minutes could reduce amylose and starch content. In vitro starch digestibility of flour by amylase digestion of wet grits nagara bean for 60 minutes with pre treatment soaked in $Ca(OH)_2$ which is 88.79% db, peak viscosity and final viscosity of 2416 cP and 2419 cP.

Keywords: *nagara bean, α amylase digestion, gelatinization profile, in vitro starch digestibility*

Monday, July 29th 2019	
	Agenda
- 07.00	Arrangement before departure
07.00 - 07.30	Registration
07.30 - 08.15	Trip to BPTP
08.15 - 10.15	Visit BPTP
10.15 - 10.45	Trip to Laboratory of Kimia Agro
10.45 - 12.45	Visit Laboratory of Kimia Agro
	Trip to Balitsa Lembang
	Visit Balitsa Lembang
12.45 - 13.45	Ishoma
13.45 - 15.00	Trip to the Mayor House (Pendopo Walikota)
15.00 - 15.30	Break
15.30 - 16.00	Opening
	Recitation of The Holy Quran
	Traditional Ceremony
16.00 -16.30	Committee report
16.30 - 17.45	**Opening Speech**
	Chairman of PATPI
	Badan Ketahanan Pangan Deptan
	Chairman of AGRIN
	Chairman of SafeNetwork
	Mayor of Bandung
17.45 - 18.30	Praying
18.30 - 19.00	Keynote speech : Dr. Zuzy Anna
	Sustainable Development Goals National and Regional Readiness of Indonesia
19.00 - 20.30	Gala Dinner + Announcments
	Art Performance
	Lises UNPAS
	Kecapi FTIP UNPAD
20.30-21-00	Closing
Tuesday, July 30th 2019	
07.30 - 08.00	Registration
08.15 - 08.45	Openning speech : Rector of Universitas Padjadjaran
08.45- 09.00	Art Performance (Keong dkills)
09.00 - 10.30	Plenary Session I
	Moderator :
	Keynote speech 1 : Dr. rer. nat. Sonja Kleinertz
	Marine Fish Parasites: ecological roles, fish health, human impacts and handling related to fisheries and food safety
	Keynote speech 2 : Prof. Nobutaka Ito
	How Agriculture Can Achive The Goal for Food and nergy Sovereignty
	Keynote Sppech 3 : PT. CAN
	Spice Up - Geodata for Sustainable Pepper Raming : Case Pepper Fieldat Bangka Belitung, Lampung, West Kalimantan, and East Kalimantan
	Discussion
10.30 - 12.30	Pararel Session 1

	Agenda
12.30 -13.15	Lunch break
13.15 - 14.30	Plenary Session II + Annual Meeting
	Moderator :
	Keynote speech 1 : Prof. Yazid Bindar, Ph.D
	Carbohydrate Food Now and Future : Problem and Solution
	Keynote speech 2 : Ir. Alik Sutaryat
	Pemberdayaan Petani Melalui Budidaya Tanaman Sehat Ramah Lingkungan Berkelanjutan Berbasis Kearifan Lokal "Organic System of Rice Intensification"
	Keynote speech 3 : Prof. Dr. Taufiq Yap Yun Hin
	Production of Renewable Bioenergy from Oil Palm Biomass
	Discussion
14.30 - 16.30	Pararel Session 2 + Food Forum Business
16.30 - 17.00	PATPI Award and closing

Parallel Session Schedule

Time	Title	Author	Class
10.30 - 10.45	(EFFECT OF HEATING TEMPERATURE AND TIME ON THE FORMATION OF 11S GLOBULIN NANOFIBRIL FROM BOGOR NUT (Vigna subterranea (L.) Verdcourt) FOR FOOD INGREDIENTS)	Dewi Sarastani	1p
10.45 - 11.00	THE EFFECT OF SUWEG TUBER STARCH AND CHITOSAN TO MECHANICAL CHARACTERISTIC OF EDIBLE FILM	Dewi Sulistyowati	1p
11.00 - 11.15	EFFECTS OF DIFFERENT SOAKING TIME USING CALCIUM CHLORIDE EXTRACTED FROM EGGSHELL ON PHYSICOCHEMICAL AND ORGANOLEPTIC PROPERTIES OF SWEET POTATO CHIPS	Ignasius Radix AP Jati	1p
11.15 - 11.30	CHARACTERISTISC OF VIRGIN COCONUT OIL EMULSION WITH HONEY AND CITRIC ACID	Lastri Wiyani	1p
11.30 - 11.45	APPLICATION OF CASSAVA STARCH, GEMBILI STARCH AND CANNA STARCH FOR EDIBLE COATING	Seveline	1p
11.45 - 12.00	Physicochemical, Organoleptick Dry Noodles Ratio of Sorghum (Sorghum bicolor L.) Flour and Mung Bean (Vigna radiata)	Sri Budi Wahjuningsih	1p
12.00 - 12.15		Widya Puspantari	1p
12.15 - 12.30		Willy Pranata Widjaja	1p

Parallel Session Schedule

Time	Title	Author	Class
10.30 - 10.45	Stabilizer of Emulsion Preparation from Passion Fruit Skin Pectin (Passiflora edulis)	Illah Sailah	2p
10.45 - 11.00	A comparison of discrimination triangle and tetrad test: case study in sweetener product	Dede Robiatul Adawiyah	2p
11.00 - 11.15	The Comparison Sweetness Levels of Stevia Tea (Stevia rebaudiana Bertoni) and Other Sweeteners	Ana Nadiya Afinatul Fishi	2p
11.15 - 11.30	THE CHANGES OF MOISTURE CONTENT, TOTAL PHENOLIC CONTENT, AND PASTING PROFILE CAUSED BY PARBOILING PROCESS OF BLACK RICE	Reza Widyasaputra	2p
11.30 - 11.45	Chemical properties of milk kefir whey-based beverages using honey as sweetener	Firman Jaya	2p
11.45 - 12.00	PHYSICOCHEMICAL PROPERTIES OF WHITE OYSTER MUSHROOM POWDER FLAVORING (Pleurotus ostreatus) POST-DRYING (TEMPERATURE AND TIME	Nur Lailatul Rahmah	2p
12.00 - 12.15	Functional, Thermal, and Molecular Properties of Ozonated Starches	Kejora Handarini	2p
12.15 - 12.30	The Effect of Cooking on The Microscopic Structure of Banana Starch and Instan Banana Breakfast Cereal Porosity	I Mulyawanti	2p

Parallel Session Schedule

Time	Title	Author	Class
10.30 - 10.45	Effect of Coconut milk and palm sugar to glutinous rice flour pasting properties on the traditional food of Dodol Ulame	Setiavani, G	3p
10.45 - 11.00	Production and Stability Test of Natural Dye Powder from Carrots (Daucus carota)	N A Permatasari	3p
11.00 - 11.15	The change of chemical and antioxidant properties of coconut sap added with histidin during heating treatment	Pepita Haryanti	3p
11.15 - 11.30	Quality of cheese analogous to the addition of VCO as a fat substitute and variations of emulsifiers	Nur Aini	3p
11.30 - 11.45	EFFECT OF Amylase HYDROLYSIS IN NAGARA BEAN GRITS FROM SPONTAN FERMENTATION ON GELATINIZATION PROFILE AND IN VITRO STARCH DIGESTIBILITY	Susi, STP, M.Si	3p
11.45 - 12.00	Sensory and Chemical Properties of Cookies Formulated with South Kalimantan's Local Commodities	Desy Seventina Simanjuntak	3p
12.00 - 12.15	THE APPLICATION OF ADSORBENTS ACTIVATED CARBON FROM COCONUT SHELL AND ZEOLITE ON DECAFFEINATION COFFEE PROCESSING USING SWISS WATER METHOD	Dr. Satrijo Saloko	3p
12.15 - 12.30	Influence of pandan leaf extract and fortificants addition and cooling duration to cooking quality, preference level, and glycemic index of brown parboiled rice fortified with chromium and magnesium	Dr. Ir. Wisnu Adi Yulianto, M.P.	3p

Parallel Session Schedule

Time	Title	Author	Class
10.30 - 10.45	CARRAGEENAN AS STABILIZER IN HERBAL CHOCOLATE FORMULATIONS	Anis Yohana Chaerunisaa	4p
10.45 - 11.00	Study The Rate of Drying and Level of Osmosis Dehydration on Physical Properties of Dried Cengkir Mango	Yosini Deliana	4p
11.00 - 11.15	The Proportion of Cassava (Manihot esculenta Crantz) with Sorghum Flour (Sorghum bicolor L. Moench) and Glycerol Monostearate (GSM) Concentrates toward The Characteristic of Fortified Analog Rice	Wisnu Cahyadi	4p
11.15 - 11.30	Application of Whey Powder from Goat's Milk in Processed Food	Yelliantty	4p
11.30 - 11.45	Development and Characterization of edible coating formulations based on mixture of carbohydrates, lipids and proteins	Yudi Garnida	4p
11.45 - 12.00	EFFECT USING SWEET POTATO AND TARO COMPOSITE FLOUR AS PARTLY SUBSTITUTION OF WHEAT FLOUR IN CAKE	Healthy Aldriany Prasetyo	4p
12.00 - 12.15	PENGARUH SUHU PEMANASAN TERHADAP KOMPOSISI KIMIA DAN SIFAT FUNGSIONAL TEPUNG KENARI DEFATTED	G. S. Suhartati Djarkasi	4p
12.15 - 12.30	THE MAKING OF GREEN SPINACH VEGETABLE LEATHER AS AN FE SOURCE TO INCREASE THE NUTRITIONAL INTAKE	Angelly Wulan Pricilia K.	4p

Parallel Session Schedule

Time	Title	Author	Class

10.30 - 10.45	Palm Oil Yield Potency on Different Level of Ripening and Storage Time Based on Fruits Percentage and Fresh Fruit Bunches	Adi Roeswanto	5p
10.45 - 11.00	The Effects of Ozone Treatment on Microbiological and Physicochemical Properties of Soymilk Beverage	Agustina Ayu Perwitasari	5p
11.00 - 11.15	DETERMINATION OF ULTRAFILTRATION RESISTANCE USING SERIES RESISTANCE MODEL IN INULIN PURIFICATION FROM RED FRUIT PEDICEL EXTRACTION (Pandanus conoideus L)	Murtiningrum	5p
11.15 - 11.30	PEMANFAATAN TEPUNG, PATI, DAN SERAT UBI JALAR UNGU PADA PEMBUATAN BISKUIT (UTILIZATION OF PURPLE SWEET POTATO FLOUR, STARCH, AND FIBRE IN BISCUITS MAKING)	Prof.Dr.Ir. Elisa Julianti, MSi	5p
11.30 - 11.45	Phisicochemical Properties of ozone-oxidizes cassava starch under different slurry concentration	satmalawati, Em	5p
11.45 - 12.00	Powder Production of Sea Cucumber (Holothuria scabra): Effect of Processing Method of The Various Parts of Sea Cucumber Body on The Antioxidant Properties and Chemical Characteristics	Ansharullah	5p
12.00 - 12.15	The Influence of Cooked Rice Addition On Joruk (Fermented Fish Product)	Dyah Koesoemawardani	5p
12.15 - 12.30	Effect of the fermentation periods of the Yellow Bamboo shoots (B. vulgaris Striata) var. with L. plantarum starter on physical and chemical properties of bamboo shoots flours as a source of dietary fiber	Rohadi	5p

Parallel Session Schedule

Time	Title	Author	Class
10.30 - 10.45	PHYSICO-CHEMICAL AND ANTIMICROBIAL PROPERTIES OF CASEIN-CHITOSAN EDIBLE FILMS AS FOOD QUALITY AND FOOD SAFETY	MW Apriliyani	6p
10.45 - 11.00	GENETIC RELATEDNESS of LOCAL Cronobacter sakazakii BASED ON INVASION GENE ompA	Ririn Fahrun Nisa	6p
11.00 - 11.15	ANALYSIS OF HEAVY METAL CONTAMINANTS (Pb and Sn) IN CANNNED DRINKS	Wildan Wibawa Perdana	6p
11.15 - 11.30	Effect of Whey Kefir's Goat Milk on Adhesion of Candida albicans to Resin Acrylic Surfaces	L. E. Radiati	6p
11.30 - 11.45	Effect of Ozonation and Pasteurization on Total Microorganisms, pH and Density Whole Milk and Skim Milk During Cold Storage	Gita Genecya	6p
11.45 - 12.00	Novel Dioscorea Hispida sp. (Ubi Gadong) starch-based hydrogels and their beneficial use as disinfectants	Imran Azman	6p
12.00 - 12.15		Sri Suhartini	6p
12.15 - 12.30	The Effect of Sulfuric Acid Catalyst Concentration of Esterification Process on The Quality of Crude Palm Oil Off Grade As Biodiesel Raw Material	Mahdi Singgih Hidayat	6p

Parallel Session Schedule

Time	Title	Author	Class
10.30 - 10.45	THE SHALLOT AGRO-INDUSTRIAL CLUSTER BASED ON REGIONAL CHARACTERISTIC WITH SOFT SYSTEM METHOLODOGY APPROACH: A CONCEPTUAL DESIGN	Ermia Sofiyessi	7p
10.45 - 11.00	COMMUNITY POTENTIAL MAPPING FOR ACTIVATING AND DEVELOPING OF ENTREPRENEUR SOSIAL BASED ON LOCAL COMMODITY IN BERAU REGENCY, EAST KALIMANTAN	Marlis Nawawi	7p
11.00 - 11.15	EFFECT OF DROUGHT STRESS ON MORPHOLOGICAL TRAITS OF PADJADJARAN MAIZE HYBRIDS	Meisha Athaya Thifalny	7p
11.15 - 11.30	REGION PLAN FOR ACTIVITIES IN CIRATA RESERVOIR BASED ON THE SUITABILITY OF AQUACULTURE FISHERIES AND WATER TOURISM	Dwi Rustam Kendarto	7p
11.30 - 11.45	THE ROLE OF INNOVATION CAPABILITY AND TECHNOLOGY ADOPTION TOWARD PRODUCT INNOVATION PERFORMANCE IN MICRO SMALL ENTERPRISES FOOD INDUSTRY	Agnes Irwanti	7p
11.45 - 12.00	Critical Issue Mapping of Indonesian Natural Rubber Industry Based on Innovation System Perspective	Dadang Kurnia	7p
12.00 - 12.15	POTENTIAL OF BEEF, BIO ENERGY, AND SUSTAINABLE DEVELOPMENT OF PALM OIL INTEGRATION ACTIVITIES	Firman RL Silalahi	7p
12.15 - 12.30	CRYSTALLOGRAPHY IN AGRICULTURE	Bohari M Yamin	7p

Parallel Session Schedule

Time	Title	Author	Class
14.30 - 14.45	Effect of light and storage on the quality of potato tuber (Solanum tuberosum L.) cultivar 'medians' grown at different altitudes	Ira Endah Rohima	1s
14.45 - 15.00	(EFFECTt OF STORAGE TEMPERATURE AND TYPE OF PACKAGING ON PHYSICAL AND CHEMICAL QUALITY OF CARROT)	Ali Asgar	1s
15.00 - 15.15	THE USING OF FILLER MATERIAL PACKAGING TO REDUCE POST-HARVEST LOSS OF PAPAYA DURING TRANSPORTATION	Wendianing Putri Luketsi	1s
15.15 - 15.30	CHANGES OF CHEMICAL CONTENTS DURING WHITERING PROCES OF WHITE TEA	M. Iqbal Prawira-Atmaja	1s
15.30 - 15.45	ASSESSMENT OF GIBBERELLIN AND WAXING ON SOME TYPE OF PACKAGING TO PRESERVE QUALITY OF CHILI DURING TRANSPORTATION	Didit Rahadian, S.TP., M.Sc	1s
15.45 - 16.00	Characteristics of Persimmon Velva Fruit (Diospyros foot L f) Garut Local Commodities Using Carboxy Methyl Cellulose (CMC) as Stabilizer During Cold Storage	AtiAtul Quddus	1s
16.00 - 16.15	Physical, Microbial and Pesticide Contaminations on Fresh Vegetable and Fruit Marketed in Samarinda-Indonesia	Anton Rahmadi	1s
16.15 - 16.30	Hypothiocyanite Treatment Inhibited the Browning of Fresh -cut Apple room Storage	Ahmad Ni'matullah Al-Baarri	1s

Parallel Session Schedule

Time	Title	Author	Class

14.30 - 14.45	ANTIOXIDANT AND ANTIMICROBIAL ACTIVITY OF FRESH AND STEAMED YOUNG COCONUT LEAVES (Cocos nucifera L.)	Umar Santoso	2s
14.45 - 15.00	Antioxidant Activity, Physical Characteristic and Sensory Properties of Melon Marshmallow with Red Beet Extract Additions.	Frysye Gumansalangi	2s
15.00 - 15.15	Formulation Nanoemulsion of Moringa leaves (Moringa oleifera Lam) Extract as an Antioxidant	Nina Jusnita	2s
15.15 - 15.30	FORTIFICATION OF SKIM MILK WITH WHEY PROTEIN XANTHONE AND ITS EFFECT ON ANTI HYPERGLYCEMIC ACTIVITIES IN ANIMAL MODEL	R.D. Andriani	2s
15.30 - 15.45	Study of antioxidant of purple skin broken rice, browned purple rice and purple rice stem cultivated organically in Kanagarian Kasang, Batang Anai District, District Padang Pariaman	I Ketut Budaraga	2s
15.45 - 16.00	Characteristics of Liquid Skim Milk which Fortified with Whey-Mangosteen Pericarp (Garcinia mangostana L.) Extract Solution	Jaya Mahar Maligan	2s
16.00 - 16.15	COLOR DEVELOPMENT AND ANTIOXIDANT ACTIVITY IN HONEY CARAMEL	Monika Rahardjo	2s
16.15 - 16.30	FUNCTIONAL PROPERTIES OF TEMPE PROTEIN ISOLATES DERIVED FROM GERMINATED AND NON-GERMINATED SOYBEANS	Made Astawan	2s

Parallel Session Schedule

Time	Title	Author	Class
14.30 - 14.45	MOLECULAR DOCKING STUDIES AND PHYSICO CHEMICAL PROPERTIES ON THE INTERACTION OF XANTHONE WITH WHEY PROTEIN (β-LACTOGLOBULIN AND α-LACTALBUMIN)	PP Rahayu	3s
14.45 - 15.00	THE INFLUENCE OF BLACK RICE BRAN AQOUEUS EXTRACT ON BLOOD AND SPLEEN PROFILES	Nurlaili, E.P	3s
15.00 - 15.15	Chemical Characteristics and Glycemic Index of Processed Products from Corn Starch Modified with Green Tea Polyphenols	N Nurjanah	3s
15.15 - 15.30	OPTIMIZATION OF GASEOUS OZONE APPLICATION IN REDUCING TOTAL AMOUNT OF MICROORGANISM IN MUNTOK WHITE PEPPER	Hayu Lesya Putri	3s
15.30 - 15.45	Phenolic Contents and The Antioxidant Capacities Evaluation of Indonesia Wild Honey from Seven Different Regions	Y. Riswahyuli	3s
15.45 - 16.00	Physical and Antimicrobial Properties of Hydroxypropyl Starch Bio-plastics Incorporated with Nyamplung (Calophyllum inophyllum) Cake Extract	Rini Umiyati	3s
16.00 - 16.15	Viability of encapsulated Lactobacilus casei using glucomannan iles-iles and skim milk to low pH and bile salts	Ngatirah	3s
16.15 - 16.30	ANTIOXIDANT ACTIVITY OF ESSENTIAL OIL OF PULAI LEAVES (ALSTONIA SCHOLARIS L. R. Br.)	Silvi Leila Rahmi	3s

Parallel Session Schedule

Time	Title	Author	Class
14.30 - 14.45	Formula optimization of functional beverage made from carica seeds	Santi Dwi Astuti	4s
14.45 - 15.00	Effect of Feeding Coconut Sugar-Mix Coffee Rich in Antioxidants on Blood Pressure, Serum SOD and MDA of Sprague Dawley Rats	Hidayah Dwiyanti	4s
15.00 - 15.15	MUNG BEAN (Vigna radiata) MILK YOGURT RICH IN PHENOLIC ANTIOXIDANT AND DISSOLVED PROTEIN AS AN ALTERNATIVE OBESITY DRINK	Hery Winarsi	4s
15.15 - 15.30	HYPOGLYCEMIC PROPERTIES OF COMPOSITE FLOUR THAT WAS MADE OF GROWOL AND COWPEAS (Vigna unguiculata) SPROUT FLOUR	Bayu Kanetro	4s
15.30 - 15.45	POTENCY OF PARIJOTO (Medinilla speciosa) SYRUP AS FUNCTIONAL FOOD: STUDY OF PHYSICALS, CHEMICALS, FUNCTIONAL, AND SENSORY PROPERTIES	Naila Zulfa	4s
15.45 - 16.00	OPTIMIZATION OF EXTRACTION PROCESS OF COFFEE PULP AS A SOURCE OF ANTIOXIDANT	Samuel P. Kusumocahyo	4s
16.00 - 16.15	Influence Starfruit Vegetable (Averrhoa blimbi) and Papaya (Carica Papaya) to the quality of organoleptic properties, Vitamin C, and Crude Fiber Content in Jelly Candies	Srianta, I.,	4s
16.15 - 16.30	Quantitative Determination of Quercitrin and Myricitrin in Three Different Parts of *Euphorbia hirta* As Bioflavonoid Source for Functional Food	Agung Nugroho	4s

Parallel Session Schedule

Time	Title	Author	Class
14.30 - 14.45	INNOVATIVE POST-HARVESTED PROCESSING ACTIVATION PROGRAM FOR POTENTIAL LOCAL AGRO-BASED FOOD COMMODITY USING DESIGN THINKING APPROACH [CASE STUDY: KELADI TUBER/TARO (Caladium bicolor Vent.) COMMODITY IN MANOKWARI, WEST PAPUA]	Dwi Purnomo	5s
14.45 - 15.00	INNOVATION ON FOOD PRODUCT DEVELOPMENT FOR LOCAL COMMODITY WITH DESIGN THINKING APPROACH [CASE STUDY: TENGKAWANG FRUIT (Shorea stenoptera Burck.) COMMODITY IN BENGKAYANG, WEST KALIMANTAN]	Anas Bunyamin	5s
15.00 - 15.15	DEVELOPMENT OF SORGUM BIOINDUSTRY IN DEMAK TO SUPPORT FOOD SECURITY	Kun Tanti Dewandari	5s
15.15 - 15.30	SWOT Analysis and Strategy Formulation for Cocoa Small and Medium Enterprises in Nglanggeran Area, Gunung Kidul Regency-Indonesia	Aulia Adzkia Fauzi	5s
15.30 - 15.45	Linking Agro-Industrial Engineering Body of Knowledge with Industry 4.0: A Case study of Agroindustrial Engineering Study Program at IPB University	Taufik Djatna	5s
15.45 - 16.00	An Analysis and Design of Recovery System for Service Failure in Online Culinary Business	R P Juarsa	5s
16.00 - 16.15	Modeling Digital Business for Classification and Quality Post Harvest in the Potato Agroindustry	Ririn Regiana Dwi Satya	5s

Parallel Session Schedule

Time	Title	Author	Class
14.30 - 14.45	EXTRACTION BABY JAVA CITRUS (Citrus sinensis (L) Osbeck) PEEL USING MICROWAVE ASSISTED-EXTRACTION	Erryana Martati	6s

14.45 - 15.00	Negative Pressure Cavitation Extraction of Total Phenolics Compound from Millettia sericea roots	Fitry Filianty	6s
15.00 - 15.15	ISOLATION OF GUAIENE FROM PATCHOULI OIL USING VACUUM FRACTIONATION DISTILLATION	Sarifah Nurjanah	6s
15.15 - 15.30	Microencapsulation of Unsaponifiable Fraction of Palm Fatty Acid Distaillate (PFAD) by Spray Drying Method	Teti Estiasih	6s
15.30 - 15.45	Optimazation of Pectin Extraction from Sweet Orange Peel (Citrus sinensis) using Vacuum Microwave Assisted Extraction (VMAE)	Widya Dwi Rukmi Putri	6s
15.45 - 16.00	Production of Cellulose-Polyvinyl Alcohol-Alginate Based Filament from Oil Palm Empty Fruit Bunch	Ray Einstein Manuel Sihite	6s
16.00 - 16.15	Technical Feasibility Analysis of Establishment of Coconut Water Processsing Business in Pengabuan Subdistrict, Tanjung Jabung Barat District Jambi Province	Ade Yulia	6s
16.15 - 16.30	Evaluation Types of Solvents on Extraction of Bixa orellana and Application of Extract on A Chicken Sausage Product as Natural Colour and Antioxidant Sources	Isti Handayani	6s

Parallel Session Schedule

Time	Title	Author	Class
14.30 - 14.45	The Canvas Financial Management Approaches for Profitability of Leather Tanneries Industry on an Interest-Free Capital Structure	Aceng Kurniawan	7s
14.45 - 15.00	Supply Chain Performance Measurement and Improvment for Palm Oil Agroindustry:A Case Study at Riau Province and Jambi Province	Marimin	7s
15.00 - 15.15	Performance of FFB Transportation System and Identification the caused of Untrasported FFB in Palm Oil Estate of PT XYZ	Budiyanto	7s
15.15 - 15.30	Roles of Green Technologies in Resource and Environmental Sustainability: Case Studies in the Area of Agroindustry	Suprihatin	7s
15.30 - 15.45	TECHNICAL ANALYSIS AND PERFORMANCE TEST OF CHOPPER MACHINES FOR COMPOSTING RICE STRAW	Wahyu Kristian Sugandi	7s
15.45 - 16.00	Adsorbtion Power Effectivity Of Combinated Adsorbent Zeolite, Activated Charcoal, And Sand In Liquid Waste Processing Of Agroindustry Fptk Upi Bandung's Laboratory	Shinta Maharani	7s
16.00 - 16.15	Social Capital in Encouraging the Food Security Enhancement for Fishermen Families	Tintin Febrianti	7s
16.15 - 16.30	Functional Food In Indonesia: An Analysis of Legal and Institution Framework	Amelya Gustina	7s

Parallel Session Schedule

Time	Title	Author	Class
14.30 - 14.45	PATPI Award Nominee	Agung Nugroho, S.TP., M.Sc., Ph.D. (Asal Cabang Banjarmasin)	8s
14.45 - 15.00	PATPI Award Nominee	Ardiansyah, S.TP., M.Si., Ph.D. (Asal Cabang Jakarta)	8s
15.00 - 15.15	PATPI Award Nominee	Dr. Ir. Elfi Anis Saati, MP. (Asal Cabang Malang)	8s
15.15 - 15.30	Integrating SDGs in Higher Education Curriculum	Georgina J. Bordado	8s
15.30 - 15.45	Home Gardens for Family Food and Nutrition Security: Solomon Islands Experience	Ravindra Chandra Joshi	8s
15.45 - 16.00	Sustainable Livelihood of Street Food Vendors	Hanilyn A. Hidalgo	8s
16.00 - 16.15		K.M.P.LAKSHMI	8s
16.15 - 16.30		ATHULA BANDAR MANATHUNGA	8s

Indonesian Association of Food Technologist (IAFT) in collaboration with
Indonesian Agroindustry Association (AGRIN)
ICFB 2019 International Conference on Food and Bio-Industry
"Indonesia Towards Leading Agroindustry in Local Wisdom-Based Food and Bioenergy Sovereignity"
Secretariat :
Faculty of Agro-industrial Technology, Universitas Padjadjaran.
Bandung, West Java, Indonesia. Phone/Fax. 022-7795780

Acceptance Letter

June 28, 2019

Susi, STP, M.Si
Lambung Mangkurat University

Herewith, we are pleased inform you that your abstract (FPO-1-2-22) entitled "Effect Of Amylase Hydrolysis In Nagara Bean Grits From Spontan Fermentation On Gelatinization Profile And In Vitro Starch Digestibility" has been **Accepted for ORAL presentation** at the International Conference on Food and Bio-industry (ICFB) 2019, to be held on July 29-30, 2019 in Puri Setiabudhi Residence Hotel, Bandung, Indonesia. Please note the following:

1. The committee now needs to have your confirmation that you will be able to present your paper at ICFB 2019 as well as you will be able to submit your full paper to the committee July 29, 2019 at the latest. Please notify your confirmation of attendance to this following email address: confpatpi2019@gmail.com no later July 5, 2019.
2. Each oral presenter will be scheduled for a total of 15 minutes including discussion session. Please keep in mind that the time schedule is fixed.
3. Both ORAL or POSTER presentation will be invited for publication in IOP Conference Series after peer reviewed and approved by the Scientific Board. A set of instructions for the full paper format are available on our website. Please visit the website http://patpiconference.ftip.unpad.ac.id/index.html and check for the update program of the conference.
4. All presenter will be responsible for their own travel and accommodation expenses

If you have further queries, please do not hesitate to E-mail us. Your interest in ICFB 2019 is very much appreciated. We look forward to meeting you at our Conference in July.

Robi Andoyo, S.TP, M.Sc., Ph.D.
Chairman of ICFB 2019

[ICFB2019] Submission Acknowledgement

External Inbox ×

Bambang Nurhadi <info@jpfoundation.or.id> Sun, Jul 28, 2019, 8:19 PM
to me

Susi:

Thank you for submitting the manuscript, "EFFECT OF □-amylase HYDROLYSIS IN NAGARA BEAN GRITS FROM SPONTAN FERMENTATION ON GELATINIZATION PROFILE AND IN VITRO STARCH DIGESTIBILITY" to ICFB 2019. With the online journal management system that we are using, you will b able to track its progress through the editorial process by logging in to the journal web site:

Submission URL: http://ulas.jpfoundation.or.id/index.php/ICFB2019/authorDashboard/submission/43
Username: susi_tip

If you have any questions, please contact me. Thank you for considering this journal as a venue for your work.

Bambang Nurhadi

International Conference on Foods and Bio-Industry ICFB 2019

Website: http://patpiconference.ftip.unpad.ac.id/index.html

Peer-review system: http://ulas.jpfoundation.or.id/index.php/ICFB2019

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susi susi <susi_tip@ulm.ac.id>

[ICFB2019] Editor Decision

1 message

admin <info@jpfoundation.or.id> Mon, Oct 21, 2019 at 1:09 PM
To: Susi <susi_tip@ulm.ac.id>

Susi:

We have reached a decision regarding your submission to ICFB 2019, "EFFECT OF □-amylase HYDROLYSIS IN NAGARA BEAN GRITS FROM SPONTAN FERMENTATION ON GELATINIZATION PROFILE AND IN VITRO STARCH DIGESTIBILITY".

Our decision is: Revisions Required
Please submit your revision before 25th October 2019.
admin
info@jpfoundation.or.id

Reviewer A:
Recommendation: Revisions Required

---

1. *Title of the manuscript*: Does it well represent the essence of the paper? Is it specific? Is it effective?

   Good

2. Relevance: Relevance to the scope of the proceedings

   Good

3. *Abstract*: Appropriateness of abstract as a description of the paper

   Good

4. *Structure*: Structure of the paper

   Good

5. *Standard of English*: Standard of English

   Insufficient

6. Originality: How novel is the paper? Are the technical ideas presented new?

   Good

7. *Research/Study Method:* Define the appropriateness of the research/study method

   Good

8. *Clarity of drawings, graphs, and tables*: Relevance and clarity of drawings, graphs, and tables

   Good

9. *Discussion and conclusions*: Comprehensiveness of discussion, analysis, and conclusions

   Insufficient

10. *Reference list*: Is the reference list adequate and correctly cited?

    Good

11. *Contribution/s & Detailed comments*: Are there specific recommendations that you would like to suggest to the author? (Mandatory)

    please pay attention to grammatical use and punctuation. Check all the parts of the paper one by one

12. *Recommendation*: Overall decision. What is your overall recommendation for this paper?

    Publish after minor required changes

International Conference on Foods and Bio-Industry ICFB 2019

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susi susi <susi_tip@ulm.ac.id>

[ICFB2019] Ready to Publish

1 message

info@jpfoundation.or.id <info@jpfoundation.or.id> Tue, Mar 3, 2020 at 6:18 AM
To: susi_tip@ulm.ac.id

Dear author,

On behalf of the **ICFB 2019** committees, we are pleased to inform you that your article:

"Effect of α-amylase digestion in fermented Nagara bean grits for gelatinization profile and in vitro starch digestibility"

is now ready to be published in **IOP Conference Series: Earth and Environmental Science, Volume: 443**. Please download the pdf file of your article (prior to publication) that has been supplied with the volume of the proceeding and DOI (Digital Object Identifier) by click the URL below:

https://drive.google.com/open?id=1AC5gvQ4MSem2iU8MFR7xnu6cZahsCcoM

We will inform you on any further updates. Feel free to contact us if you have any further questions.

Regards,

ICFB 2019 Editorials Team

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susi susi <susi_tip@ulm.ac.id>

Proceedings of International Conference on Food and Bio-Industry 2019 now available online

1 message

IOP Conference Series team <jpcs@ioppublishing.org> Fri, Mar 27, 2020 at 6:24 PM
Reply-To: IOP Conference Series team <jpcs@ioppublishing.org>
To: susi_tip@ulm.ac.id

Your article Effect of <italic>?</italic>-amylase digestion in fermented Nagara bean grits for gelatinization profile and in vitro starch digestibility is online.
Visit iopscience.org/jpcs | View this email online I Unsubscribe

Proceedings of International Conference on Food and Bio-Industry 2019.

Thank you for publishing your paper 'Effect of <italic>?</italic>-amylase digestion in fermented Nagara bean grits for gelatinization profile and in vitro starch digestibility' in the IOP Conference Series: Earth and Environmental Science™. Your article has now been published online.

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susi susi <susi_tip@ulm.ac.id>

[ICFB2019] Ready to Publish

1 message

info@jpfoundation.or.id <info@jpfoundation.or.id> Tue, Mar 3, 2020 at 6:18 AM
To: susi_tip@ulm.ac.id

Dear author,

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https://drive.google.com/open?id=1AC5gvQ4MSem2iU8MFR7xnu6cZahsCcoM

We will inform you on any further updates. Feel free to contact us if you have any further questions.

Regards,

ICFB 2019 Editorials Team

UNIVERSITAS LAMBUNG MANGKURAT

susi susi <susi_tip@ulm.ac.id>

[ICFB2019] Editor Decision

1 message

admin <info@jpfoundation.or.id> Mon, Oct 21, 2019 at 1:09 PM
To: Susi <susi_tip@ulm.ac.id>

Susi:

We have reached a decision regarding your submission to ICFB 2019, "EFFECT OF □-amylase HYDROLYSIS IN NAGARA BEAN GRITS FROM SPONTAN FERMENTATION ON GELATINIZATION PROFILE AND IN VITRO STARCH DIGESTIBILITY".

Our decision is: Revisions Required
Please submit your revision before 25th October 2019.
admin
info@jpfoundation.or.id

Reviewer A:
Recommendation: Revisions Required

---

1. *Title of the manuscript*: Does it well represent the essence of the paper? Is it specific? Is it effective?

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    please pay attention to grammatical use and punctuation. Check all the parts of the paper one by one

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    Publish after minor required changes

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susi susi <susi_tip@ulm.ac.id>

E-Certificate ICFB 2019

1 message

patpiconf2019@gmail.com <patpiconf2019@gmail.com> Thu, Aug 1, 2019 at 9:57 AM
To: susi_tip@ulm.ac.id


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Of Completion
INTERNATIONAL CONFERENCE ON FOOD AND BIO-INDUSTRY 2019 "BANDUNG"
ICFB 2019
THIS CERTIFICATE IS PROUDLY PRESENTED TO
Susi, STP, M.Si
for your participation as Oral Presenter
in the International Conference on Food and Bio-Industry
July, 29th-30th 2019, Outdoor Seminar Puri Setiabudhi Residence, Bandung, Indonesia
Prof. Dr. Ir. Umar Santoso, M.Sc
President of IAFT
Prof. Dr. Ir. Anas Miftah Fauzi M.Eng.
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Effect of *α*-amylase digestion in fermented Nagara bean grits for gelatinization profile and in vitro starch digestibility

Effect of *α*-amylase digestion in fermented Nagara bean grits for gelatinization profile and in vitro starch digestibility

Susi[1], L Agustina[1] and S Gendrosari[2]

[1] Agroindustrial Technology Department, Faculty of Agriculture, Lambung Mangkurat University, Banjarbaru Jl A Yani KM 36 Banjarbaru Kalimantan Selatan 70714
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Abstract. Treatment of *α*-amylase digestion in wet grits nagara bean after spontaneous fermentation was assessed to determine changes in rehydration ability, gelatinization profile and in vitro starch digestibility of the flour produced. This was important for further processed products that required easy hydration in cold water and high starch digestibility. The research was carried out by hydrolysis of *α*-amylase with 60 IU enzyme activity as much as 0.1% on wet grits nagara beans from spontaneous fermentation which had been soaked in $NaHSO_3$ and $Ca(OH)_2$ for 1 hour. Moreover, *α*-amylase digestion was carried out at 37°C for 30, 60 and 90 minutes. The results showed that the amylose content of nagara bean flour from the pre-treatment soaking using $Ca(OH)_2$ was relatively higher than the pre-treatment of $NaHSO_3$, and there was a tendency for amylase digestion up to 90 minutes could reduce amylose and starch content. In vitro starch digestibility of flour by amylase digestion of wet grits nagara bean for 60 minutes with pre-treatment soaked in $Ca(OH)_2$ were 88.79% db, peak viscosity and final viscosity of 2416 cP and 2419 cP respectively.

Keywords: Nagara bean, *α*-amylase digestion, gelatinization profiles, starch digestibility in vitro

1. Introduction

Nagara bean is one of the adaptive types of cowpea grown in South Kalimantan swamps and has a high carbohydrate and protein content. The protein content ranges from 20-25% and carbohydrate content ranges from 40-60%. Spontaneous fermentation of nagara beans and fermentation by *L. plantarum* can increase protein content if compared to native nagara bean as well as increased in vitro digestibility of starch [1]. The fermentation process is one of the starch modification techniques that affect the solubility, swelling of granule, and starch viscosity [2].

Added-value of the Nagara bean can be increased through product diversification, such as breakfast cereal from the grits of nagara bean and its flour. To reduce acid production during the fermentation process like a slightly sour and aroma, Nagara bean grits were soaked using $Ca(OH)_2$ and $NaHCO_3$. Soaking the wet grits of post-fermented beans is intended to reduce acidity, as well as be able to improve physical characteristics and acceptance of cereal products [3,4], $NaHCO_3$ is commonly used for snack production through an extrusion process [5].

Nagara beans that have good rehydration in cold water will improve the performance of breakfast cereal products. Then, to boost the rehydration and its digestibility, α-amylase was used for enzymatic hydrolysis treatment. The enzymatic hydrolysis process that takes place during the fermentation process and the introduction of enzymes into the process are able to change the chemical and physicochemical characteristics and digestibility of flour or starch of beans. Hydrolysis of starch into a lower molecular weight product catalyzed by α-amylase is often to apply and is widely used for food industry applications [6,7].

Increasing food digestibility plays a crucial role to optimize nutrient bioavailability. It is closely related to the applied technology that carried out using size reduction, soaking, boiling, and fermentation processes. Flake cereal can be developed through flaking on the nagara bean grits or its flour. Hydrolysis grits by α-amylase were purposed to produce the grits easy to hydrate, to gelatinize and to digest.

Starch granules are slightly resistant by water penetration and hydrolytic enzymes because of hydrogen bonds within a molecule and other molecules. The α-amylase is categorized as an endoamylase found in many microorganisms [7]. According to [8-10] endoamylase catalyzes hydrolysis randomly on the inside of starch molecules, this results in the formation of linear and branched oligosaccharides of various chain lengths. Endoamylase cuts 1-4 glycosidic bonds which are on the (endo-) amylose or amylopectin side.

The research was aimed to determine the changes in the the gelatinization profile of nagara bean and in vitro digestibility of starch in the grits of wet nagara beans hydrolyzed (digestion) by α-amylase.

2. Materials and method

2.1. Materials and instruments

Nagara beans were obtained from the Nagara Hulu Sungai Selatan area as a part of South Kalimantan. Pepsin from gastric mucosa 250 units/mg, α-amylase from porcine pancreas Type VI-B 10 units/mg, amyloglucosidase from Aspergillusniger 30-60 units/mg, amylose standard, 3,5-Dinitrosalisyclic acid, Folin-Ciocalteau reagent, NaOH, Na_2CO_3, Na K-Tartrat, $CuSO_4.5H_2O$, ethanol, trichloroacetic acid, potassium iodide, Iodine were used. The tools such as the Waterbath shaker (Memmert), oven (Memmert), Spectrophotometer (Mapada), centrifuge, vortex and glassware were operated for chemical analysis.

2.2. Fermentation process

Fermentation was done on the nagara bean grits using the ratio between bean and water was 1:4 for 48-hours fermentation periods. The fermented beans were washed and peeled and then drained.

2.3. The treatment process

Nagara bean grits produced from spontaneous fermentation for 48 hours were neutralized by soaking using $Ca(OH)_2$ and $NaHCO_3$ up to 200 ppm for 1 hour. Nagara beans grits were washed and then digested by enzyme at a ratio of 1:2 of bean and water added α-amylase concentration of 0.1% (v/w) at 37^OC for 30, 60 and 90 minutes respectively, then drained and dried for 48 hours at 60^OC and grinded up to 80 mesh.

2.4. The parameter of analysis

The nagara bean flour was analyzed for several parameters such as amylose contents [11], reduced sugar content (DNS method), starch contents (Luff schroll method), resistant starch, digested starch [12] and in vitro starch digestibility [46]. Gelatinization profile by using Rapid Visco Analyzer Model RVA-S4 with the Thermocline for Windows (TWC) program.

2.5. Starch digestibility in vitro [46]

The flour suspension (1%) in test tube was heated in a water bath at 90ºC for 30 minutes then cooled. The amount of 2 mL flour suspension was added distillate water of 3 mL and 5 mL of Na-phosphate

buffer 0.1 M pH 7, then was incubated in a water bath at 37°C for 15 minutes. Moreover, 5 mL of *α*-amylase solution was added and then incubated at 37°C for 30 minutes. Take 1 mL of the solution, then added with 2 mL of dinitrosalicylic reagent and heated 100°C for 10 minutes. After cooling, the solution was diluted by 10 mL of distilled water. The absorbance of the solution was measured by using a spectrophotometer at a wavelength of 520 nm. Maltose content was measured using the standard pure maltose curves, starch digestibility is calculated as a percentage relative of maltose content sample to its pure starch.

2.6. Resistant starch and digested starch [12]

Flour samples of 100 mg were dissolved in 10 mL HCl-KCl buffer at pH 1.5 then vortex 1 minute, then added 100 µL pepsin solution (0.1 mL-10 mg pepsin/mL HCl-KCl, and then incubated 60 minutes at a temperature of 40°C. The tube was added a solution of *α*-amylase 1 mL (40 mg/mL tris maleate solution) and incubated at a temperature of 37°C for 16 hours at pH 6.9 to hydrolyze the digested starch, then the sample was centrifuged for 15 minutes of 4500 rpm. The supernatant was removed, then the residue was added 2M KOH of 6 mL and an 80 µL (140 U/mL) of amyloglucosidase enzyme solution and incubated at 60°C for 45 minutes at pH 4.75. The samples were centrifuged at 4500 rpm for 15 minutes. The supernatant was measured glucose levels using the DNS method. Digested starch was calculated based on the total amount of starch reduced by the amount of resistant starch.

2.7. Data analysis

The data were analyzed by analysis of variance (ANOVA) at an error rate of 5%, and then proceed using a Duncan Multiple Rate Test (DMRT) test if a real effect of treatment was available.

3. Result and discussion

3.1. Amylose content

Starch was allocated to two fractions such as amylose and amylopectin containing 20-30% of amylose and 70-80% of amylopectin [13], with an example of Barley containing 29.8% of amylose [14] and wheat of 21.5- 26.6% [15].

The results showed that *α*-amylase digestion in some treatments had an effect on the amylose content. The *α*-amylase digestion processes produced 18.49-25.38% db of amylose Nagara bean flour. Enzymatic modification shattered weak starch granules and caused pores in the surface area of starch. This would reduce the ability to bind water and to decrease viscosity. Amylose was broken into simple molecules reducing the amount of amylose starch and an excellent swelling volume [22].

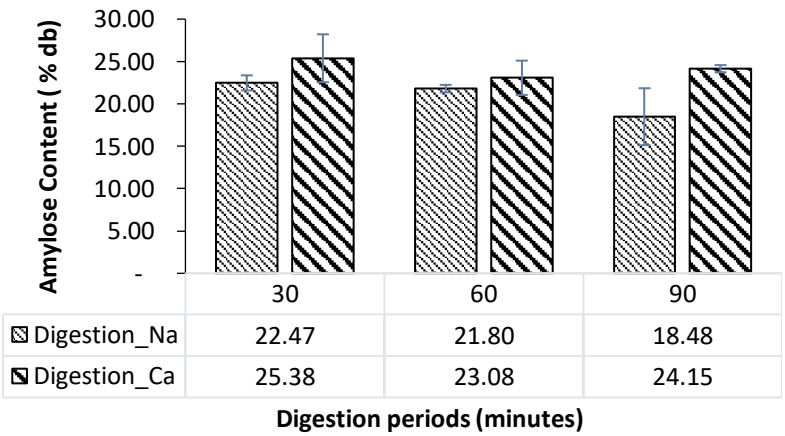

Figure 1. The intercorrelation among enzymatic digestion periods and the amylose content of Nagara bean flour.

Figure 1 shows the amount of amylose in Nagara bean flour. The digestion period of α-amylase was 90 minutes tending to a decrease of amylose content. This also correlated with an increase of amylopectin content which produces high viscosity at low temperature [14].
Wet Nagara bean grits with a neutralizing pre-treatment using $Ca(OH)_2$ tended to have a high amount of amylose. Gomez *et al* (1989) stated the alkali process of corn and wheat damaged starch granules in endosperm causing to lose its crystallinity giving an effect on the opening of amylose structure [16]. Similarly, Berrios *et al* (2004) stated that the addition of $NaHCO_3$ expanded matrix starch and protein bonds became softer and were elongated with an increase of $NaHCO_3$ concentration [17]. An increase in amylose was in line with gelatinization temperature; however, the paste viscosity was low [18].
According to [19] and [20], the Ca^{2+}, Mg^{2+}, Mn^{2+} and Na^{+} ions at 5mM concentration increased amylase activity. Calcium could protect the amylase molecule from protein hydrolysis. It prevented the configuration of amylase protein remaining biological activity and stabilizing the secunder and tertier structures of the enzyme [21].

3.2. Reducing sugar content

The α-amylase (EC 3.2.1.1) was an enzyme catalyzing internal hydrolysis processes of α-1.4 glycosidic bonds of starch into products with low molecules such as glucose, maltose and maltotriose [23-26]. Figure 2 described that the reduced sugar content of Nagara bean flour using α-amylase digestion treatment was 2.17-2.27 mg/mL showing a decrease with the digestion period up to 90 minutes.

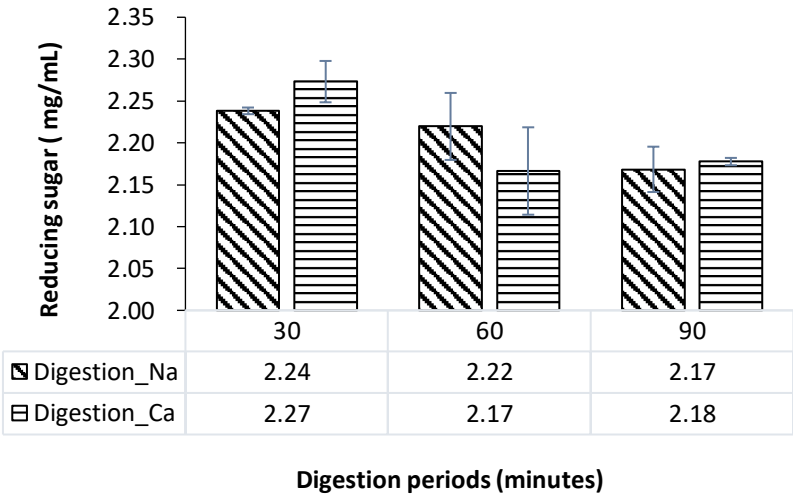

Figure 2. Intercorrelation between enzymatic digestion periods and sugar reduction content of Nagara bean flour.

The content of sugar reduction showed a low value after α-amylase hydrolysis because, in hydrolysis processes of raw Nagara bean grits, α-amylase enzyme attacked Nagara bean matrix more slowly; therefore, resulting in a low cutting glycosidic bond. In addition, the process of gelatinization and non-gelatinization preparation affected the intensity of the α-amylase hydrolysis process. Konsula and Liakopoulou-Kyriakides (2004) investigated the gelatinized potato starch and rice starch were more easily degraded by the enzyme α-amylase than in the native form [27].
The hydrolysis process of native granules using commercial enzymes varied depending on the material type, porosity and features of the surface area [28,29]. Nagara bean contained raffinose oligosaccharides, and the structure of cellulose and hemicellulose which allowing α-amylase hydrolysis were not efficient to shatter cellulose into hexose sugar. It was supported by [30] carbohydrates in sorghum were resistant to enzymatic hydrolysis due to cellulose crystallinity, surface accessibility and the ratio between hemicellulose and cellulose.

According to [29] each native starch varied porosity and the changes of starch porosity were caused by mechanic treatments such as size reduction, grinding and in situ amylase processes. Native starch granules were inert to chemical reactions causing the activity of pre-treatment which was an example from enzyme hydrolize that could increase the porosity of starch granules which chemically affect the chemical reactivity of starch. Enzymes hydrolysis processes were affected by the temperature of 37°C; however, Konsula and Liakopoulou-Kyriakides (2004) showed an increase of temperature resulting in a high reduction of sugar [27].

3.3. Starch content

The Nagara bean contains a large amount of protein and carbohydrates of 50-60%. Starch was a part of carbohydrate polymers as a component that plays a role to produce textures and to be used in industrial applications such as thickener, stabilizer, gelling agent and water retention agent [31]. The starch content of Nagara bean flour from the amylase digestion process ranged from 50.88 to 53.33%db. The result pointed to have no significant effect between α-amylase digestion and the starch content of Nagara bean flour as shown at figure 3.

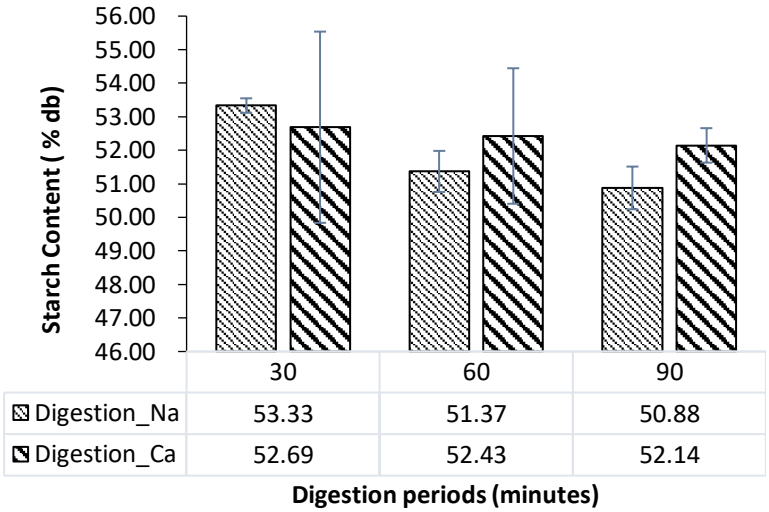

Figure 3. Intercorrelation between enzymatic digestion periods and starch content of Nagara bean flour.

There was a tendency to slightly decrease the starch content when α-amylase digestion increased up to 90 minutesHowever, a sharp decline in starch contents happened during $NaHCO_3$ pre-treatment compared to $Ca(OH)_2$. It is assumed that the ability of Ca^{2+} bonded in matrix gave an effect of cross bonds performing a high bond of intra and intermolecules causing a low degraded starch. However, the presence of $NAHCO_3$ tended to produce pores in the surface area and to reduce molecule bond strength. Likewise, another study stated Ca^{2+} had triggered off α-amylase activity [19].

3.4. Resistant starch

Some legumes are sources of carbohydrate-containing dietary fiber [32] and a slow-digestible starch and resistant starches [47]. Resistant starch was defined as starch and starch degradation products that cannot be absorbed in the small intestine in healthy individuals [33]. Type RS 1 was starch which was physically inaccessible, meanwhile, type RS 2 was natural starch granulated which was not gelatinized and difficult to be degraded by amylolytic enzymes because the structure was compact and anhydrous. Type RS 3, was retrograded starch, and RS 4 was formed from chemical modification [33, 34]. Resistant starch was measured by the enzymatic method, data of resistant starch content were presented in figure 4.

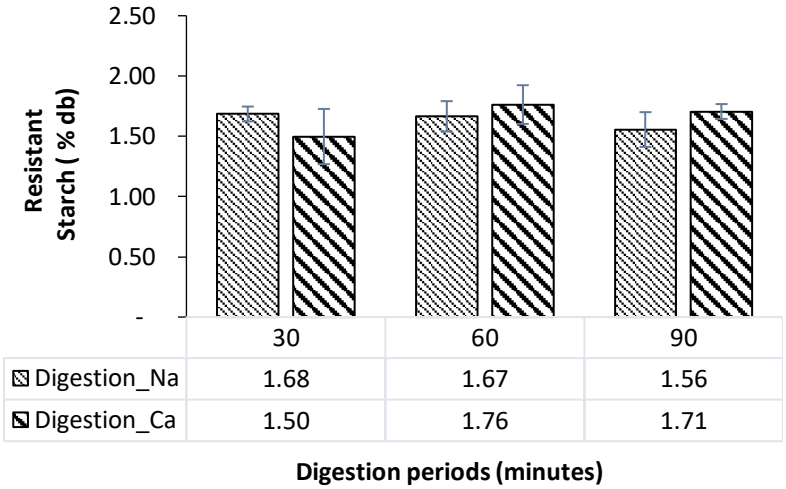

Figure 4. Intercorrelation between enzymatic digestion periods and resistant starch content of Nagara bean flour.

Figure 4 showed no differences using $Ca(OH)_2$ and $NaHCO_3$ in the flour of Nagara bean grits using α-amylase digestion. The resistant starch content in Nagara bean flour was 3.07±0.07%db, with the hydrolysis process of α-amylase tend to reduce the resistant starch. While some studies showed that resistant starch in cereals changed due to the treatment of moist-heat processes, autoclaves or autoclave-cooling cycles, conventional cooking processes such as high-pressure steaming, microwave, autoclaving, soaking, and boiling which reduced the amount of resistant starch [34-36].

3.5. Digested starch

Digested starch is calculated based on a reduction in the total amount of starch with the amount of resistant starch, digested starch including rapidly digestible starch (RDS) and slowly digestible starch (SDS). Figure 5 showed that the total digested starch in the treatment using $NaHCO_3$ and $Ca(OH)_2$ tends to be relatively stable at around 51%. The treatment of α-amylase digestion did not significantly affect the change in the amount of resistant starch so that changes in digested starch were also relatively not significantly different between treatments.

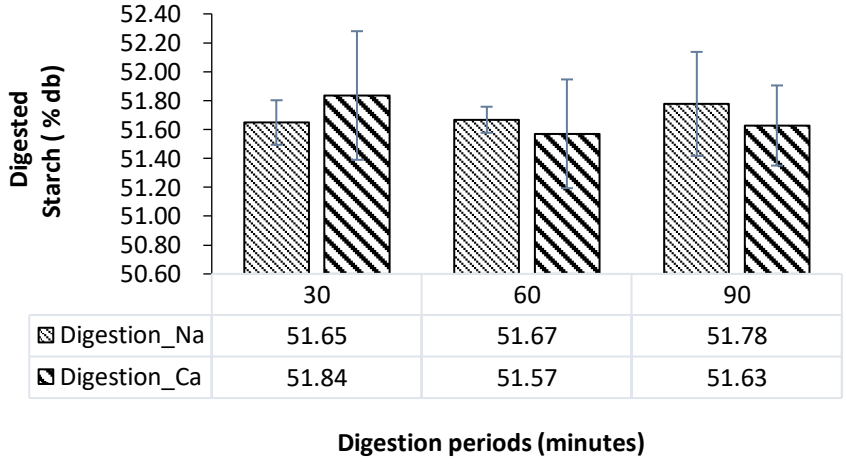

Figure 5. Intercorrelation between enzymatic digestion periods and digested starch content of Nagara bean flour.

Research by [37] mentioned the enzymatic hydrolysis process using pullulanase in rice starch decreased the rapidly digestible starch (RDS) fraction and increased slowly digestible starch (SDS) and resistant starch (RS). While in this study the fermentation process and amylase digestion reduced resistant starch, so that digested starch tended to be higher than in untreated beans. According to the Nilegaonkar [38], the autoclave process could decline the value of starch digestion index (SDI) in legumes. The autoclave method decreases starch digestibility and rapidly digested starch. The method could convert resistant starch (RS) and rapidly (RDS) digested starch into slowly digested starch (SDS). It was assumed that the pressurized steam preconditioning caused a reduced RDS, with the long period of intensively decreased steaming. Vatanasuchart *et al* (2009) explained that processed snack products from rice have a resistant starch of 2.9%db, there is an increase in starch resistant from the raw material (RS type II) [39]. This indicates the presence of resistant starch produced from retrogradation (RS type III) due to the given process [40].

3.6. Gelatinization profiles

Some changes occur during the heating of the starch-water system including swelling power, increased viscosity, translucency and solubility and loss of anisotropy (birefringence), the change was known as gelatinization. Gelatinization causes the changes in the chemical and physical properties of starch granules because of the intra-rearrangement and intermolecule of hydrogen bonds between water and starch molecules, resulting in molecular damage in starch granules.

The high initial gelatinization temperature indicated the granule was resistant to swell. Paste temperature is one of the characteristics of the paste indicating the minimum temperature needed for cooking, the energy costs needed and the stability of other components. Peak viscosity also showed the nature of the water-binding capacity of the starch. Final viscosity is used to define starch quality and shows stability in actual use, it can also be used to demonstrate the ability to form pastes or gels after cooling. The gelatinization profile of nagara bean flour is presented in table 1 and figure 6.

Table 1. The gelatinization profiles of Nagara bean flour by α-amylase digestion.

Treatments		Gelatinization profiles						
Neutralizing agent	Amylase digestion periods (minutes)	Peak visc (cP)	Trough visc (cP)	Break down visc (cP)	Final Visc (cP)	Seat back visc (cP)	Peak Time (min)	Pasting temp (º C)
GritsNa	30	2333	1275	1058	2293	1018	8.13	80.15
	60	2365	1227	1138	2298	1071	8.00	80.05
	90	2480	1206	2417	2417	1143	8.07	79.70
GritsCa	30	2369	1183	1186	2260	1077	8.13	80.10
	60	2416	1249	1167	2419	1170	8.00	79.70
	90	2391	1243	1148	1222	1079	8.13	80.10
Control		2093	1074	1019	1617	543	7.53	78.10

Table 1 shows the enzymatic digestion treatment provided a significant gelatinization profile where the highest peak viscosity was obtained in the 90 minutes enzymatic digestion of grits by $NaHCO_3$ treatment of 2480 cP with 79.7°C paste temperature while $Ca(OH)_2$ neutralized treatment resulted in peak viscosity of 2416 cP with 60 minutes digestion periods. There was a tendency for increasing digestion periods up to 90 minutes to increase peak viscosity, seatback, and final viscosity. Digestion for 60 minutes, the grits with the pre-treatment by $Ca(OH)_2$ soaking tend to have a higher peak viscosity than the pre-treatment using $NaHCO_3$. According to [41], divalent cations (Ca^{2+}) produce greater viscosity than monovalent (Na^{+}) cations due to inter or intramolecular cross bonds in polymer chains. Research by Chen *et al* (2014) showed that the addition of NaCl to the flaxseed and potato complex starch can also increase paste temperature, peak viscosity, final viscosity and breakdown value [42].

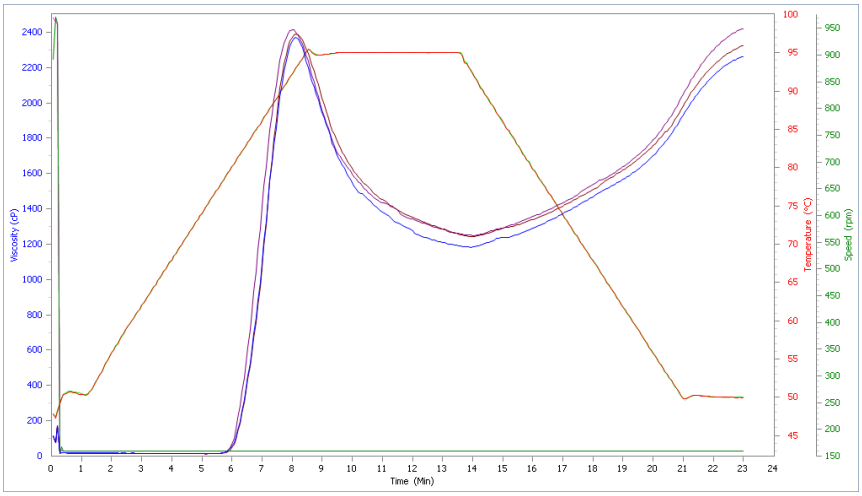

Figure 6. Gelatinization profiles of Nagara bean flour using amylase digestion with $Ca(OH)_2$ neutralizing pre-treatment.

According to Feng *et al* (2016) the addition of NaCl slightly increases peak viscosity, final and seatback viscosity, while the presence of $CaCl_2$ reduces peak, final and breakdown viscosity [43]. The high peak viscosity indicates a high starch content, which closely related to water binding capacity in starch [44]. Nagara bean flour with high peak viscosity is suitable for products that require high and elastic gel strength.

3.7. Starch digestibility in vitro

Starch hydrolysis showed the function of starch in plants as well as food sources [45]. In vitro starch digestibility illustrates the ease of digestive enzymes, especially amylase enzymes, to degrade and hydrolyze starch into short chains so that it is easier to be utilized and absorbed in the body. In vitro starch digestion in nagara bean flour from amylase digestion ranged from 76.70-88.79% db, this value was higher than starch digestibility in vitro of steamed nagara bean grits [1]. It is suspected that further amylase digestion process increases the porous structure of the starch so that it is more easily digested, the starch matrix is more accessible to the amylolytic enzyme, while the steaming process can cause the pre gelatinization process so that it can increase the crystalline structure which is more difficult to attack the amylase enzyme.

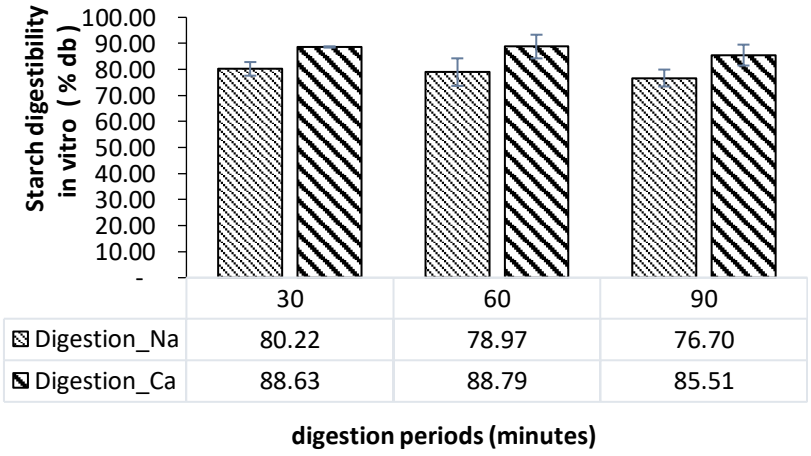

Figure 7. Intercorrelation between enzymatic digestion periods and starch digestibility in vitro of Nagara bean flour.

4. Conclusion

The hydrolyzed wet Nagara bean grits by α-amylase had a higher flour gelatinization profiles such as peak viscosity, setback viscosity and final viscosity rather than the unhydrolyzed Nagara bean flour. Wet grits of Nagara bean were carried out by neutralizing pre-treatment using $Ca(OH)_2$ and digested by α-amylase for 60 minutes had peak viscosity was higher than they were neutralized by $NaHCO_3$. Likewise, in vitro starch digestibility of flour was neutralized by $Ca(OH)_2$ which was relatively higher than neutralized by $NaHCO_3$.

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