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Tentative Schedule

12th International Seminar of Indonesian Society for Microbiology (12th ISISM)

Saturday, October 22nd, 2022

08.00 – 08.35	Confirmation of the presence of the conference participants, and Registration
	Conference Grand Opening
08.35 – 08.45	Welcome speech from Chairman of the 12th ISISM: Dr. Anto Budiharjo, M.Biotech
08.45 – 08.55	Welcome speech from Chair of Indonesian Society for Microbiology: Dr. Iman Rusmana
	Zoom Photo Session For Documentation
09.00 – 09.45	Keynote speakers 1: 14 Prof. dr. Titik Nuryastuti, M.Si., Ph.D., Sp.MK(K), 13 Faculty of Medicine, Public Health, and Nursing - Universitas Gajah Mada, Indonesia Title: Recalcitrance Of Microbial Biofilms In Clinical Setting Moderator: Niar Gusnaniar, Ph. D.
09.45 – 10.30	Keynote speakers 2: 11 Prof. Dr. Apichat Boontawan School of Biotechnology – Institute of Agricultural Technology, Suranaree University of Technology – Thailand Title: Microbial lipids production from organic agro-industrial residues (OAIR) for sustainable biofuel and oleochemical industry. Moderator: Dr. Eng. Ario Betha Juansilferro
10.30 – 10.35	Transition time
10.35 – 12.00	8 Parallel Session I
12.00 – 13.00	Lunch/Praying Break
13.00 – 14.00	Parallel Session II
14.00 – 14.45	Keynote speakers 3: 7 Prof. Dr. Clemens Karl Peterbauer Department of Food Science and Technology - Universität für Bodenkultur Wien (BOKU) Title: Auxiliarx Activities Family 3 in Bacterial Lignocellulose Degradation Moderator: Karina Bianca Lewerissa, STP, MSc, PhD
14.45 – 14.50	Transition time
14.50 – 16.00	Parallel Session III
16.00	Closing

Keynote Speaker:

1. Prof. dr. Titik Nuryastuti, M.Si., Ph.D., Sp.MK(K), Faculty of Medicine, Public Health, and Nursing - Universitas Gajah Mada, Indonesia
2. Prof. Dr. Apichat Boontawan, School of Biotechnology – Institute of Agricultural Technology, Suranaree University of Technology – Thailand
3. Prof. Dr. Clemens Karl Peterbauer **7** Department of Food Science and Technology - Universität für Bodenkultur Wien (BOKU)

Topic 1 & 2 : Biosecurity and Biosafety/ Bioenergy and Bioeconomy**Zoom Link :****Parallel Session I**

(Moderator) Anindyajati, M.Si			
No	Time	Name of Author	Article title
1	10.40 - 10.50	Ismaya Krisdawati	Rapid Detection of Foodborne Pathogen Bacteria <i>Vibrio parahaemolyticus</i> in Seafood Using Gene ToxR with Real-Time Polymerase Chain Reaction Method
2	10.50 -11.00	Gladys Indira Putri S	Determination of Optimal Annealing Temperature <i>Vibrio alginolyticus</i> tdh Gene Primers Using Polymerase Chain Reaction Method
3	11.00 -11.10	Sugiyono Saputra	Enterobacteriaceae Isolated from Captive Asian Palm Civet (<i>Paradoxurus hermaphroditus</i>) and Their Phenotypic Resistance to Antimicrobials
4	11.10 -11.20	Catur Sriherwanto	Mutation of Lipase-Producing Bacteria from The Screening of Palm Oil Effluent for Fat Hydrolysis Process on Palm Oil Mill Effluent (POME)
5	11.20 -11.30	Ida Bagus Wayan Gunam	Effect of Cellulase Enzyme Concentration and Fermentation Temperature on Bioethanol Levels from Crude Cellulose of Corn Stover
6	11.30 -11.40	Nining Betawati	Protein Content of Two Cyanobacteria Genera Isolated from Indonesia (<i>Leptolyngbia</i> HS-16 and <i>Mastigocladus</i> HS-46) Grown on Artificial NPK Medium
7	11.40 – 11.50	Muhammad Evy Prastiyanto	Antibacterial Activity of Yellow Pigment from Gib 18 Isolates of <i>Porites</i> sp. Coral Bacterial Symbionts against Multi-Drug Resistant (MDR) Bacteria that Cause Wound Infections

Topic 3 : Molecular and Medical Biotechnology

Zoom Link :

Parallel Session I

(Moderator) Dr. Catur Riani			
No	Time	Name of Author	Article title
1	10.40-10.50	Muhammad Iskandar Zulkarnain	Molecular Identification of <i>Chlorella sorokiniana</i> using ITS Markers and 18S rDNA and Production of Carotenoids by Light Treatment
2	10.50-11.00	Cliff Clarence Haliman	Multidrug Resistance and Extensively Drug-Resistance in <i>Staphylococcus aureus</i> , <i>Staphylococcus epidermidis</i> , and <i>Staphylococcus haemolyticus</i>
3	11.00-11.10	Muhammad Evy Prastiyanto	Anti-MDR bacterial activity of wound isolates from bacteria associated with sponge of <i>Amphimedon sp.</i> from Karimunjawa Island, Central Java, Indonesia
4	11.10-11.20	Nuki Bambang Nugroho	Isolation of active compound that inhibit Plasmodium falciparum dihydroorotate dehydrogenase derived from an Indonesian endophytic fungus, <i>Talaromyces veruculosus</i> BioMCC-f.EP.2165, as antimalarial
5	11.20-11.30	Marlina	Hair Tonic Formulation with Secretome from Synovial Membrane-Mesenchymal Stem Cells
6	11.30-11.40	Ni Nengah Dwi Fatmawati	A Combination of AntibioGram and Random Amplified Polymorphism DNA Polymerase Chain Reaction (RAPD-PCR) of <i>Klebsiella pneumoniae</i> Isolates as An Early Detection of a Potential Outbreak in Local Hospital Setting
7	11.40-11.50	Debie Rizqoh	Potential of Phyllosphere Bacteria as Producers of Bioactive Compounds

Topic 3 : Molecular and Medical Biotechnology

Zoom Link :

Parallel Session II & III

(Moderator) Dr. Tjahjani Mirawati Sudiro			
No	Time	Name of Author	Article title
9	13.00 -13.10	Desi Sagita	Keratolytic activity of <i>Bacillus velezensis</i> 's recombinant protease
10	13.10 -13.20	Rati Sarina Passoe	Antibacterial Potency of Sandalwood's Leave and Bark (<i>Santalum album</i>) against <i>Propionibacterium acnes</i> Bacteria
11	13.20 -13.30	Mukriani	Isolation and Identification of L-Asparaginase Producing Bacteria from Macroalga Symbionts <i>Eucheuma spinosum</i> by Using 16S RNA Analysis
12	13.30 -13.40	Rifdah Hanifah	Phylogenetic Analysis of Amphotericin B Resistant <i>Candida haemulonii</i> from the National Referral Hospital ICU Environment
13	13.40 -13.50	Zaki Mubarak	Molecular Identification of Pathogenic Bacteria Periodontitis <i>Porphyromonas gingivalis</i> in Diabetic and Non-Diabetic Patients from Banda Aceh
14	13.50 -14.00	Sartini	Modulation of Amoxicillin Susceptibility using Green Tea and Roselle Calyx Aqueous Extract in Extended Spectrum β -Lactamase(ESBL)-producing <i>Escherichia coli</i>

	14.00 – 14.45	Keynote speakers 3: Prof. Dr. Clemens Karl Peterbauer	
(Moderator) Dr. drh. Erida Wydiamala, M.			
Parallel Session III			
No	Time	Name of Author	Article title
15	14.50 -15.10	Lia Yulia Budiarti	Antimicrobial Activity of Leaf and Bark Extract of <i>Xylocarpus granatum</i> J.Koeing Against Several Species of Bacteria and <i>Candida albicans</i>
16	15.10 -15.20	Anand Reyna Maulana	Bioprospection of Isolates of Eunapius Freshwater Sponge Symbiont Bacteria as Producers of Cellulase and Protease Enzymes
17	15.20 -15.30	Salsabilla Ananda Rachmansyah	Gene Encoding Polyketide Synthase (PKSs) Detecting and Identification Bioactive Compound of <i>Bacillus velezensis</i> EC43
18	15.30 -15.40	Ghina Salsabila	In vitro Test of Phenol Coefficient Combination of <i>Citrus hystrix</i> Leaf and Peel Extract as Antiseptic Candidate
19	15.40 -15.50	Desi Purwaningsih	Fibrinolytic Test Isolate Bacteria From Congot Beach Waters
20	15.50 -16.00	Sipriyadi	Antimicrobial Activities of Endophytic Bacteria from Elephant Foot Yam Plant (<i>Amorphophallus paeoniifolius</i> (Dennst.) Nicolson) Against Several Human Pathogens

Topic 4 : Environmental Biotechnology

Zoom Link :

Parallel Session I

(Moderator) Dr. rer.nat. Zahra Noviana			
No	Time	Name of Author	Article title
1	10.40-10.50	Muhammad Azri	Development and Determination of Air Quality Using The Gaussian-Plume Mathematics Model Approach For The Prediction of Air Microbial Distribution in Health Laboratory Building Environment
2	10.50-11.00	Diah Radini Noerdjito	Essential effect of copper addition on the growth of marine microalgae <i>Nannochloropsis oceanica</i>
3	11.00-11.10	Lenni Fitri	Decrease of COD and BOD Level in Palm Oil Wastewater by Thermophilic Bacteria
4	11.10-11.20	Khudrotul Nisa Indriyasari	Abundance and Characteristics of Microplastics in Coastal Sediment and Seawater Collected from Surabaya and Tulungagung
5	11.20-11.30	Dr. Surono	In vitro test of supporting of dark septate endophytic fungi (<i>Leptodontidium orchidicola</i> , <i>Podospora glutinans</i> , and <i>Zopfiella latipes</i>) on tomato and rice plant growth under low pH and Aluminum stress conditions
6	11.30-11.40	Dian Hendrayanti	The Removal Efficiency of Phytoremediation Agent <i>Azolla</i> sp. for Laundry Wastewater
7	11.40-11.50	Felina Pranata Irawan	Bioprospecting, Molecular Identification, and Detection of NRPS Gene of Sea Cucumber <i>Stichopus monotuberculatus</i> Symbiotic Bacteria against Fish Pathogens <i>Aeromonas hydrophila</i> and <i>Vibrio parahaemolyticus</i>
8	11.50-12.00	Siti Khotimah	Detoxification of Chrom (VI) to Chrom (III) by Chromate Reductase In Bacteria LKS-08 Isolated from Tanning Waste

Topic 5 : Agricultural Biotechnology

Zoom Link :

Parallel Session I

(Moderator) Dyah Wulandari, Ph.D			
No	Time	Name of Author	Article title
1	10.40-10.50	Betty Natalie Fitriatin	Screening of Halotolerant Phosphate Solubilizing Bacteria and its Effect on the Growth of Rice Seedlings on Salinity Media
2	10.50-11.00	Ahdiat Agriansyah	Assembly And Mapping Resistance Gene Against Powdery Mildew Using Characterized Amplified Sequence Region Marker On Melon (<i>Cucumis Melo L.</i>) Cultivar Tacapa
3	11.00-11.10	Dwi Umi Siswanti	Effect of Slow-Release Organic Fertilizers on Growth of Chili (<i>Capsicum sp.</i>)
4	11.10-11.20	Pratiwi Hamzah	Study of Putative Pathogenesis-Associated Genes of <i>Rhizoctonia solani</i> AG1-IA Causal Agent of Rice Sheath Blight
5	11.20-11.30	I Putu Suparthana	Study on Callus Formation of Endanger Medicinal Plant Purnajiwa which Play an Important Role of Their Conservation and The Potential as a Source of Bioactive Compounds
6	11.30-11.40	Ariya Putra	Potential Philospheral Bacteria Origin of Broccoli (<i>Brassica Oleracea</i> Var. <i>Italica</i>) As Biocontrol Of Phytopathogens <i>Ralstonia solanacearum</i> as Well as Plant Growth Promoting Bacteria
7	11.40-11.50	Yuli Lestari	Nitrogen fixation ability and indole acetic acid (IAA) production of endophytic bacteria and its effect on rice growth
8	11.50-12.00	Muhammad Faishal Fauzaan	Isolation and Identification of Endospore-forming Rhizobacteria from Broccoli (<i>Brassica oleracea</i> var. <i>Italica</i>) and Its Capabilities as a Biocontrol Agent of <i>Ralstonia solanacearum</i> and Biofertilizer

Topic 5 : Agricultural Biotechnology**Parallel Session II & III**

(Moderator) Yoga Dwi Jatmiko, PhD			
No	Time	Name of Author	Article title
9	13.00 -13.10	Farkhatun Nisa	Potential Endospore-forming Rhizobacteria From Cherry Tomato Plants (<i>Solanum lycopersicum</i> var. <i>cerasiforme</i>) as PGPR and Phytopathogenic Biocontrol of <i>Ralstonia solanacearum</i> and its Molecular Identification
10	13.10 -13.20	Ni'matuzahroh	Exploration of phosphate solubilizing bacteria from the rhizosphere soil of the De Durian Park Wonosalam Jombang
11	13.20 -13.30	Sulastri	The effective formulation of consortium phosphate solubilizing endophytic bacteria with diazotrophic and ACC-deaminase producing bacteria as bioagent for improving maize growth under saline stress
12	13.30 -13.40	Dela Dwi Alawiyah	Screening, Production, and Characterization of Bacterial Phosphatase Enzyme isolated from Tuban Mangrove Soil, East Java, Indonesia
13	13.40 -13.50	Aurora Awalia	Isolation and Morphological Characterization of

		Kirana Putri	Philospheric Bacteria from Japanese Spinach (<i>Spinacia oleracea</i> L.) Potential as Plant Growth Promoting Bacteria
14	13.50 -14.00	Rizky Nurcahyo	Diversity and Multiple Barcodes Molecular Identification of Entomopathogenic Fungi from Penggaron Forest Ungaran – Central Java
	14.00 – 14.45	Keynote speakers 3: Prof. Dr. Clemens Karl Peterbauer	
(Moderator) Dr. Nurlaili			
Parallel Session III			
No	Time	Name of Author	Article title
15	14.50 -15.10	Desak Ketut Tristiana Sukmadewi	The Potential of Coffee Husk as a Carrier Material in Biofertilizer and Its Effect on Arabica Coffee Seeds
16	15.10 -15.20	Risky Hadi Wibowo	Isolation and Characterization of Mercury Resistant Bacteria on Gold Origin, Lebong District
17	15.20 -15.30	Munti Yuhana	The spread of antibiotic resistance in bacteria in aquaculture and its control based on the One-Health concept
18	15.30 -15.40	Muhammad Hamzah Solim	Agronomic Evaluation and Yield Stability Analysis of Promising Mutant Rice Lines (<i>Oryza sativa</i> L.) over Different Environments in Indonesia
19	15.40 - 15.50	Merry Meryam Martgrita	Phenolic Compounds Scale Up Production from Styra Leaf And Extract Purification using Ion Exchange Chromatography
20	15.50 - 16.00	Dini Ryandini	16 Screening of Pectinase-Producing Bacteria Isolated from Logending Mangrove Ecosystem

Topic 6 : Food Biotechnology and Fermentation**Zoom Link :****Parallel Session I**

(Moderator) Dr. Siti Nur Jannah, S.Si., M			
No	Time	Name of Author	Article title
1	10.40-10.50	Dewi Peti Virgianti	<i>Weissella confusa</i> as Associated Lactic Acid Bacteria in <i>Tetragonula laeviceps</i> Honey
2	10.50-11.00	Laksmi Hartajanie,	Quantification of Bioactive Components of Fermented Bitter melon (<i>Momordica charantia</i> L.) Juice
3	11.00-11.10	Jayen Aris Kriswantoro	Effect of Different Roasting Degrees on the Flavour Characteristics of Fermented Arabica Green Bean Coffee Using Controlled-Second Fermentation
4	11.10-11.20	I Nengah Sujaya	Development of Specific Method for Enumeration of Probiotic <i>Weissella confusa</i> F213 in Human Feces
5	11.20-11.30	Yoga Dwi Jatmiko,	Characterization of lytic bacteriophage for Salmonella Typhimurium from Fermented Shrimp Paste (Terasi)
6	11.30-11.40	Lindayani	Quantification of Bioactive Components Of Freeze-Drying Application on Fermented Bitter Melon (<i>Momordica charantia</i> L.) Juice Extract Using <i>Lactobacillus fermentum</i> LLB3
7	11.40-11.50	Ririn Puspawati	Effect of Addition of Glucose on The Exopolysaccharide Produced by <i>Lactobacillus plantarum</i> with Different Fermentation Temperatures
8	11.50-12.00	Esti Widowati	Combination Pectinase, Cellulase, and Amylase Enzymes on Pacitan Sweet Orange (<i>Citrus sinensis</i>) Juice Clarification
9	12.00 -12.10	Fifi Afati	Effect of Fermentation Using Lactic Acid Bacteria on the Aging Process of Single Clove Garlic (<i>Allium sativum</i> L.) Towards the Profile of Anti-Oxidant Activity of Black Single clove Garlic

Quantification of Bioactive Components Of Freeze-Drying Application on ¹Fermented Bitter Melon (*Momordica charantia* L.) Juice Extract Using *Lactobacillus fermentum* LLB₃







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Faculty of Agricultural Technology
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INTRODUCTION: Bitter Melon



Source: Personal documentation

-  Widely consumed as **Food** or **Traditional Medicine**
-  Rich in **Bioactive Compounds**
-  High **Antioxidant** Activities
-  Extensive range of beneficial **Health Effects**

(Tan *et al.*, 2016)



Bioactive Compounds

Contained in
Bitter Melon

(Tan *et al.*, 2016; Tan *et al.*, 2014)

Phenolic

Flavonoid

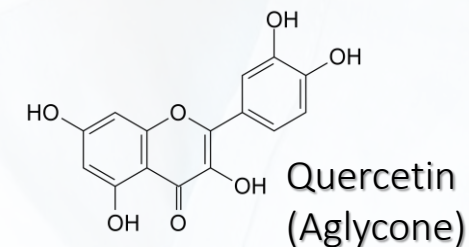
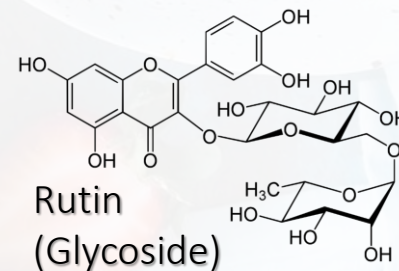
Saponin

Gallic Acid

- Bitter melon **fruit**: good source
- High **antioxidant** activities
- Positive therapeutical reaction to cardiovascular diseases
- Inhibitor of **thrombin** (in cellular stage)

Rutin & Quercetin

- Quercetin: has potential antiviral activities



Charantin

- Most eminent curcubitane-type titerpenoid
- An anti-hyperglycemic agent
 - ✓ could control blood glucose levels.
- **β-sitosterol + β-stigmasterol (1:1).**



Lactic Acid Fermentation on Bitter Melon Juice

Previous study by: Hartajanie *et al.* (2018)

Lactobacillus fermentum

Antioxidant Activities
+15%

β -glucosidase enzyme

Hartajanie *et al.*
(2018)

Antioxidant activities ↗:
Presumed to be related
with
bioactive components ↗

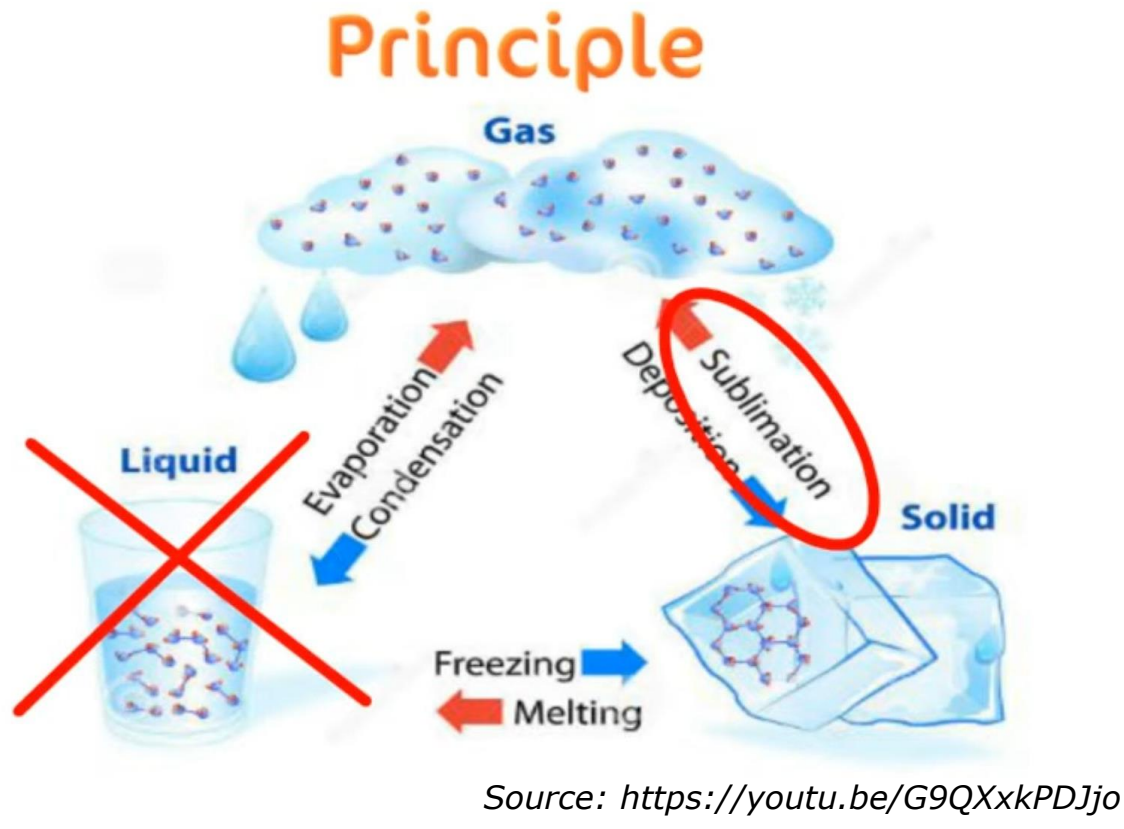


Source: Personal documentation

However,
the increase in the **number of
bioactive compounds** contained in
fermented bitter melon has not been
studied further.

Freeze-drying

- ✓ A dehydrating technique which involves the **sublimation** of water in a product.
- ✓ The product is frozen before being exposed to **vacuum pressure** → causes the water to sublimate and desorb.



Decrease in the product's volume and weight



Uses low temperature → maintain the food qualities

(Karam *et al.*, 2016; Silva-Espinoza *et al.*, 2020)

The aim of research:



1

1 To determine the **bioactive contents changes** in fermented bitter melon juice extract.

2

To determine the **bioactive contents changes** in fermented bitter melon juice extract, which may occur during the freeze-drying process.

Research Methods

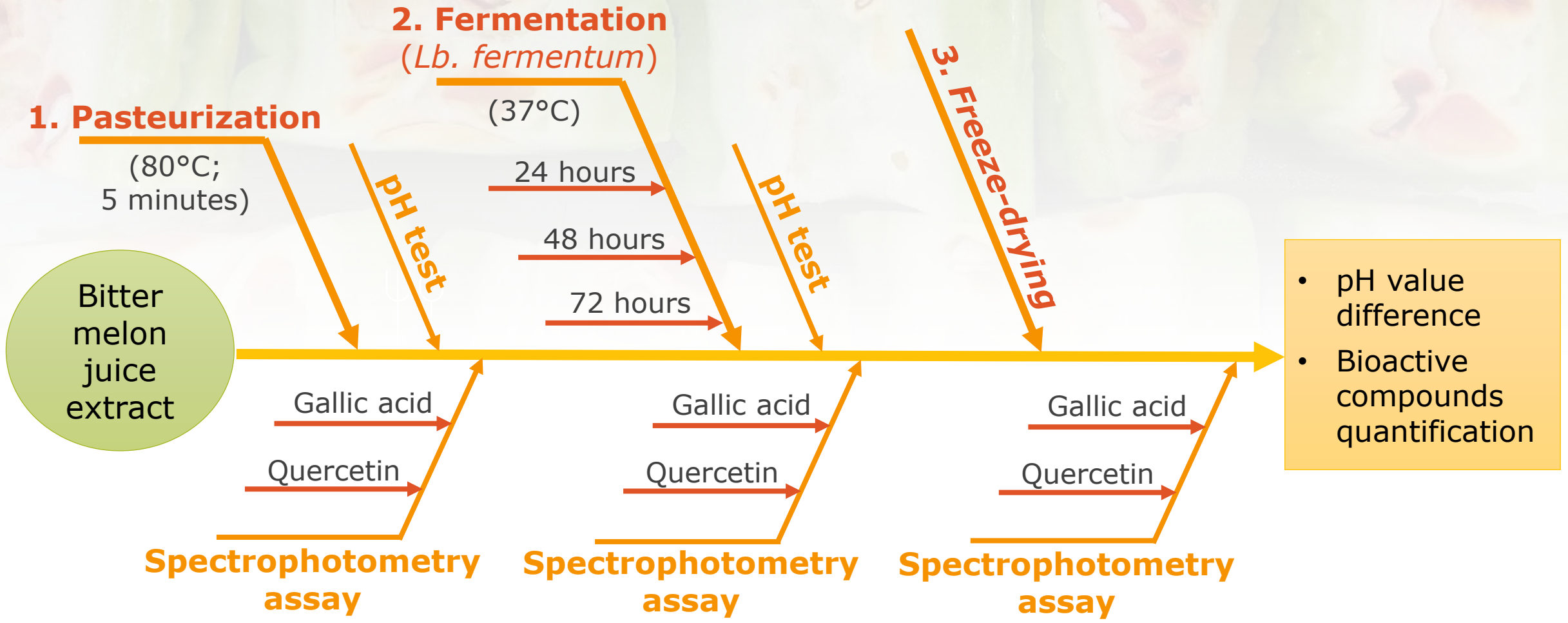
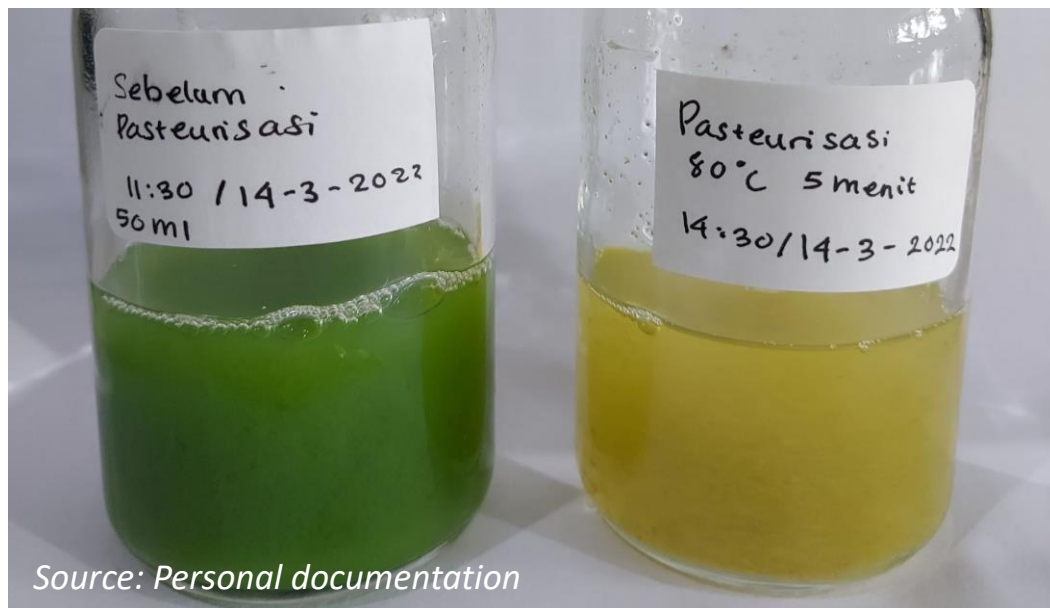
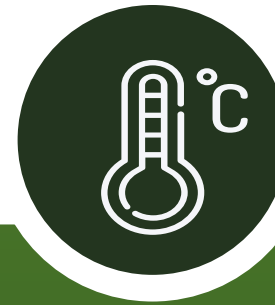


Table 2. ¹ Total Phenolic (GAE) and Total Flavonoid (QE) Contents in Fresh and Pasteurized Bitter Melon Juice Extract.

Component	Treatment	
	Fresh	Pasteurized
Total Phenolic (GAE in ppm)	220,63 ± 8,38 ^a	339,27 ± 43,76 ^b
Total Flavonoid (QE in ppm)	5,09 ± 2,29 ^a	24,38 ± 2,68 ^b



Source: Personal documentation



RESULTS & DISCUSSION

Pasteurization on Bitter Melon Juice

Thermal processing can increase bioactive components in plant materials (Hsieh *et al.*, 2021):

- Breakdown of the phenolic/flavonoid-containing macromolecules (Chiu *et al.*, 2015; Ríos-Ríos *et al.*, 2019)
- Cell rupture (Juániz *et al.*, 2016)
- Non-enzymatic conversion between precursors (Gan *et al.*, 2017)

*note: additional temperature or thermal treatment duration might affect in the decrease of such compounds

Fermentation on Bitter Melon Juice

Consistent to Hartajanie *et al.* (2018):
Result obtained from this work performed
a significant decrease in pH value of the
samples over the fermentation periods.

- ✓ Refers to the production of **organic acids**.
- Indicates the occurrence of fermentation process in bitter melon juice.

Table 1. Experimental pH Value Test Results on Fresh, Pasteurized, and Fermented Bitter Juice Melon Extract.

Fresh	Pasteurized	Fermented		
		24 hours	48 hours	72 hours
5.5 ± 0.15 ^a	4.76 ± 0.03 ^{b,p}	4.45 ± 0.02 ^{q,x}	4.33 ± 0.04 ^{q,y}	4.26 ± 0.02 ^{q,z}

Fermentation on Bitter Melon Juice

Source: Personal documentation

Table 3. ¹ Total Phenolic (GAE) and Total Flavonoid (QE) Contents in Pasteurized and Fermented Bitter Melon Juice Extract.

Component	Pasteurized	Fermented		
		24 hours	48 hours	72 hours
Total Phenolic (GAE in ppm)	339,27 ± 43,76 ^a	231,38 ± 18,76 ^{b,p}	214,00 ± 7,70 ^{b,p}	199,03 ± 25,11 ^{b,p}
Total Flavonoid (QE in ppm)	24,38 ± 2,68 ^a	18,08 ± 5,29 ^{b,q}	6,70 ± 1,65 ^{b,p}	3,07 ± 4,38 ^{b,p}

Fermentation by *Lactobacillus fermentum*

Yan *et al.* (2022):

- Confirmed a decrease in phenolic (GAE) and flavonoid (RE) contents on fermented Shenheling extract using *Lb. fermentum* (grx08).
- Reported an **increase in antioxidant activity**



Hartajanie *et al.* (2018):

- Reported an **increase in antioxidant activity** by 15% in fermented bitter melon juice using *Lb. fermentum* LLB3



The improved antioxidant activity could be due to an increase in **other bioactive compounds** or the production of **new organic acids** that have **radical scavenging abilities** (Yan *et al.*, 2022).

1 Effect of Freeze-Drying on Bioactive Components in Fermented Bitter Melon Juice

- ✓ Flavonoids → non-significant
- ❖ Phenolics → significantly higher

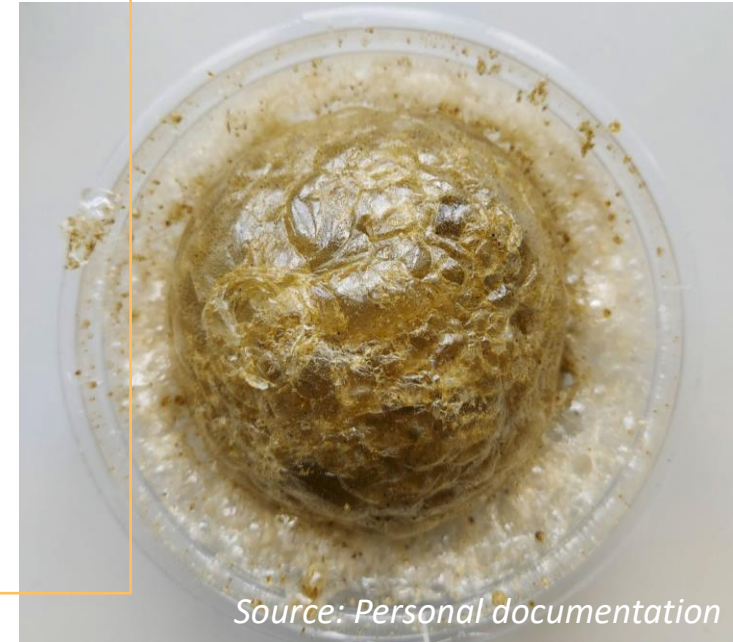
Table 4. Total Phenolic (GAE) and Total Flavonoid (QE) Contents in Fermented and Freeze-Dried Fermented Bitter Melon Juice Extract.

Component	Fermented			Fermented & Freeze-Dried		
	24 hours	48 hours	72 hours	24 hours	48 hours	72 hours
Total Phenolic (GAE in ppm)	231,38 ± 18,76 ^{p,x}	214,00 ± 7,70 ^{p,x}	199,03 ± 25,11 ^{p,x}	306,99 ± 29,54 ^x	295,08 ± 22,34 ^y	261,92 ± 6,74 ^x
Total Flavonoid (QE in ppm)	18,08 ± 5,29 ^{q,x}	6,70 ± 1,65 ^{p,x}	3,07 ± 4,38 ^{p,x}	9,95 ± 0,45 ^x	6,58 ± 0,47 ^x	2,88 ± 2,06 ^x

- Karam *et al.* (2016): Freeze-drying did not provide a significant decrease in the bioactive content → low temperature used
- **Higher total phenolic** → possibly affected by extraction method

*Gallic acid: **POLAR** → strongly bound to water fraction

Hewavitharana *et al.*, (2020): the use of **organic solvent** such as ethanol could be **inefficient**



Source: Personal documentation

1

Lactic acid fermentation of bitter melon juice extract performed a **decrease** in both total phenolics and total flavonoids of the samples.

2

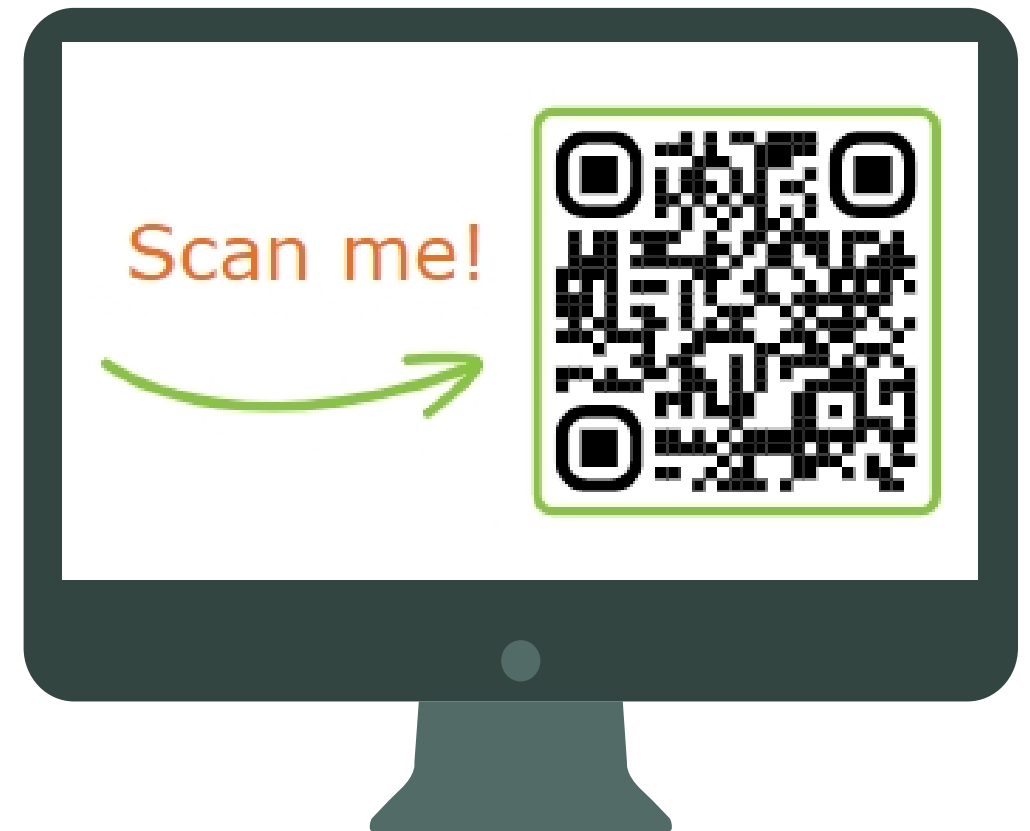
¹ Freeze-drying process **did not give significant effect** in flavonoid contents, but **higher values of phenolic contents** were obtained.

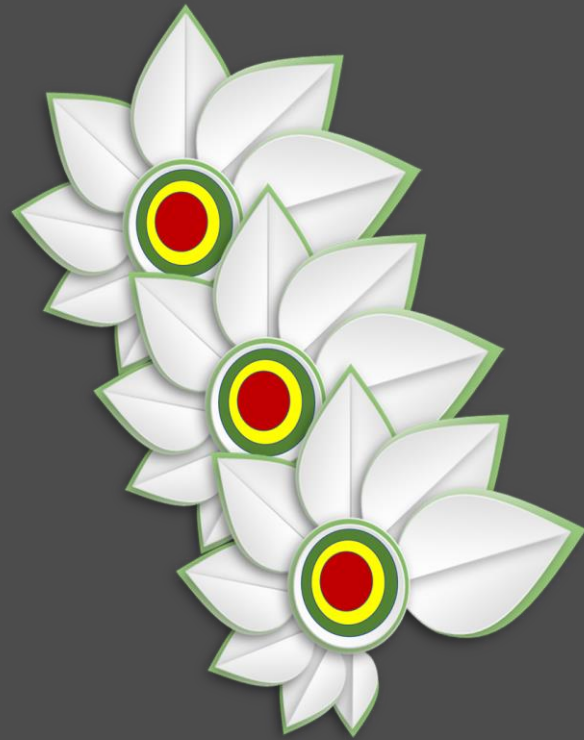
Conclusion

Main Reference

Hartajanie, L., Lindayani, L., Novita, A., Sutanto, T. E., & Sundoro, A. A. (2018). *Lactobacillus fermentum* LLB3 improves antioxidant activity of bitter melon (*Momordica charantia*). *Microbiology Indonesia*, 12(2), 65–68. <https://doi.org/10.5454/mi.12.2.5>

Other References





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Dr. Ir. Lindayani, MP.



Michael Sean



Sherlina Audrey M.



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