

*"Future Research and Technology on Herbal Medicine Application
for Diabetes and Other Degenerative Disorder"*



8-9th July 2021

PROGRAM BOOK & ABSTRACTS

International Seminar Traditional Herbal Medicine (ISTHM)
Indonesian Medicinal Plants



**PROGRAM
DAY 1**

**International Seminar Traditional Herbal Medicine ISTHM 2021
Indonesian Medicinal Plants**

8 th July 2021			
Time	Duration	Activity	PIC
07.30 am	60 mins	Registration	
08.30 am	10 mins	Opening ceremony: Lampung Welcome Dance	MC
08.40 am	10 mins	Indonesian National Anthem	
08.50 am	10 mins	Report by Chairman of 59 th TOI Seminar	Chairman
09.00 am	10 mins	Welcome speech 1 from TOI (KaB2P2TOOT)	
09.10 am	10 mins	Welcome speech and Official opening by Rector of University of Lampung	
09.20 am	5 mins	Do'a/prayer	
09.25 am	10 mins	Closing Remark and Photo session	MC
Plenary Session 1			
09.35 am	95 mins	Main speaker 1: Director of Yankestrad Kemenkes RI	Prof. Suwijiyo Pramono
		Keynote speaker 1: Prof. Taifo Mahmud, Ph. D. (Oregon State University - USA)	
		Keynote speaker 2: Prof. Dr. MT. Kamaluddin, MSc. (FK - Unsri)	
11.10 am	75 mins	Keynote speaker 3: Prof. Dr. dr. Asep Sukohar, M.Sc. (Ketua IDI Lampung)	Prof. Sutopo Hadi
		Keynote speaker 4: Prof. Dr. Keri Lestari Dandan, M.Si., Apt. (FK UNPAD)	
		Keynote speaker 5: Prof. Dr. Ir. Yuli Widyastuti, MP (POKJANAS TOT)	
LUNCH BREAK (12.30-13.30)			
13.30 pm	210 mins	Parallel Oral Presentation & Poster Session	

**PROGRAM
DAY 2**

**International Seminar Traditional Herbal Medicine ISTHM 2021
Indonesian Medicinal Plants**

9 th July 2021				
Time	Duration	Activity	PIC	
07.30 am	30 mins	Registration		
08.00 am	10 mins	Opening session	MC	
Plenary Session 2				
08.10	m 100 mins	Keynote speaker 6: Prof. Takuya Sugahara (Japan)	DR. Samsu H. Nurdin, MSc.	
		Keynote speaker 7: Prof. Yaya Rukayadi (UPM)		
		Keynote speaker 8: Prof. Nor Hadiani Ismail (UiTM)		
09.50 am	5 mins	Photo session		
09.55 am	75 mins	Keynote speaker 9: Prof. Yana Maolana Syah, M.S., Ph.D. (FMIPA ITB)	Rochmah Agustrina, Ph.D.	
		Keynote speaker 10: Dr. Masteria Yunovilsa Putra (LON LIPI)		
		Keynote speaker 11: Prof. Suharso, PhD. (FMIPA Unila)		
11.20	5 min	Photo session	MC	
11.25 am	25 mins	Exhibitions on Herbal Products		
LUNCH BREAK (12.30-13.30)				
13.30 pm	135 mins	Parallel Oral Presentation & Poster Session		
15.45 pm	15 min	Closing Ceremony	MC	

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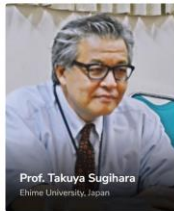
International Seminar on Traditional Herbal Medicine & Its Nanotechnology Applications

July 8-9th 2021, Bandar Lampung, Indonesia

Main Speakers



Keynote & Invited Speakers



PARALLEL SESSION
Day 1

International Seminar Traditional Herbal Medicine ISTHM 2021
Indonesian Medicinal Plants

Seminar Parallel Schedule

July 8th, 2021

ROOM I: Traditional and Complementary Medicine

MODERATOR : Dr. Ir. *Yaktiworo* Indriani, M,Sc.

TIME	AUTHOR	TITLE
13.30 - 14.05	Rini Handayani	Sambiloto (<i>Andrographis paniculata</i> Nees.) Leaf Fermented Using <i>Aspergillus oryzae</i> and Antibiofilm Assay Against Gram-Negative Bacteria
	Atur Puja Gusti	Acute Toxicity Test of Bangle (<i>Zingiber montanum</i>) Rhizome Essential Oil with Brine Shrimp Lethality Test (BSLT) Method
	Fahrauk Faramayuda	Production of Sinensetin from Cell Suspension Cultures of <i>Orthosiphon aristatus</i> Blume Miq. Purple Varieties
14.05 - 14.40	Abdi Firdaus Masdianto	In Silico Study Potential of Activated Compounds Extract of <i>Annona Muricata</i> Linn Leaves as A Hypoglycemia Agent Through The Activation of Peroxisome Proliferator Activator Receptor γ (PPAR γ) and Glycogen Synthase
	Muhammad Iqbal Sugiharto	The Potency Of The Soursop, (<i>Annona muricata</i> Linn.) Leaves Active Compounds To Wards The Inhibition Of α -Glucosidase and α -Amylase by In Silico
	Ibnu Hajar	Tanaman Obat Tradisional untuk Persalinan Masyarakat Melayu Siak Propinsi Riau
14.40 - 15.15	Apt. Drs. Kosasih MSc	Cytotoxic activity of Cantigi [<i>Vaccinium varingiae</i> folium (Blume) Miq.] leaf extracts on T47D cells in vitro
	Gres Mareta, S.Si., M.Si	Local Community Ethnomedicin of Lampung Tribe in Pesisir Selatan District, Pesisir Barat Regency
	Dr. Noviany, M.Si	Metabolomics Approach for Understanding the Correlation Between Antioxidant Activity and Its Secondary Metabolites from Different Part of <i>Sesbania grandiflora</i>

POSTER

TIME	AUTHOR	TITLE
15-30 - 16.25	Tanti Tatang Irianti	Formulation of Temu Kunci (<i>Boesenbergia pandurata</i> (Roxb.) Schlecht) Rhizome Extract Sunscreen, Inhibition Activity of Tyrosine Photodegradation and Its Total Phenolic Compounds
	Ela Amelia POSTER	The Combination of Sugar Palm Midrib Extract (<i>Arenga pinnata</i> Merr.) and Nutgrass Extract (<i>Cyperus rotundus</i> L.) As Gel Formulation to Inhibit the Acne Bacterias (<i>Propionibacterium acnes</i> and <i>Staphylococcus epidermidis</i>)
	Rahmatul Qodriah	In Vitro Antioxidant and Anticholesterol of Salam (<i>Syzygium Polyanthum</i> Wight.) Leaf Extract In 96% Ethanol And Water Using Spectrophotometry Method
	Tina Rostinawati (POSTER)	Activity of ethanol extract of <i>Aegle marmelos</i> (buah Maja) to clinical isolate of <i>Escherichia coli</i> causing urinary tract infection

ROOM II: Exploration on Potential Herbal Medicine

MODERATOR: Dr. Subeki

TIME	AUTHOR	TITLE
13.30 - 14.05	Abigail Nyoto	In-Vitro Inhibitory Activity Combination of <i>Moringa oleifera</i> Leaf Extract and Bacteriocin <i>Bifidobacterium longum</i> against <i>Salmonella typhimurium</i>
	Fransiska Thea Setyaratri	Potential Moringa Leaf Extract (<i>Moringa oleifera</i>) as Prebiotics to Support <i>Bifidobacterium longum</i> growth
	Shadila Fira Asoka	Red ginger (<i>Zingiber officinale</i> var. <i>Rubrum</i>): its essential oil content and potential as an anti-Propionibacterium acnes by molecular docking
14.05 - 14.40	Ika Fitriya	The Effect of giving Kepok Banana (<i>Musa Acuminata</i> X <i>Balbisiana</i>) on The Skin of Mice (<i>Mus musculus</i>) Exposed to Ultraviolet Light
	apt. Indri Kusuma Dewi, M.Sc.	Determination of the SPF value of the extract and fraction gel corncob (<i>Zea mays</i> L.)
	Weni Puspita	Formulation and Sunscreen Activity Test of Lotion From Ethanolic Extract of Buas-Buas Leaf (<i>Premna Serratifolia</i> L.)
14.40 - 15.15	Sri Eka Rahmadany	Determination of Chemical Compounds Content and SPF Value of Nutmeg Oil with Tween 80-Ethanol Variation
	Rizky Aditio Saputra	Antioxidant and Sunscreen Activity of Nutmeg Oil Microemulsion
	Misbahul Munir	Potential of Nutmeg Oil In Microemulsion as Sunscreen with Variation Tween 80-PEG 400
15.15 - 15.50	Jeany Audina Suryaningkunti	A Review of Pharmacological Activity of Seaweeds <i>Sargassum</i> sp. and <i>Eucheuma cottonii</i>
	Silviana Hasanuddin	Aktivitas penghambatan, Identifikasi Senyawa, dan Prediksi In silico Fraksi Daun Peterseli (<i>Petrocelinum crispum</i> Mill) Sebagai Agen Antijamur <i>Malassezia furfur</i>
	Indriaty	Assessment Cytotoxic assay of Rhizophoraceae Plants Mangrove using Brine Shrimp (<i>Artemia salina</i> L) model

POSTER

TIME	AUTHOR	TITLE
15-50 - 16.25	apt. Dra. Liliek Nurhidayati, M.Si. (POSTER)	The potency of sulfated polysaccharide from <i>Sargassum aquifolium</i> (Turner) C. Agardh as antiplatelet agen
	Nazliniwaty (POSTER)	The Effect of Hydroalcohol Extract of <i>Artocarpus lacucha</i> Buch.Ham and <i>Anredera cordifolia</i> (Ten) Steenis. Leaves on <i>Porphyromonas gingivalis</i> ATCC 33277
	apt. Reymon, S.Si.,M.Si (POSTER)	Antimicrobial Activity of Ethanolic Extract of <i>Meistera chinensis</i> Rhizome by TLC-Direct Bioautography Method against Pathogenic Microorganisms

ROOM III: Herbal Pharmacotherapy & Pharmacological Study

MODERATOR: Ramadhan Triyandi, S.Farm., M.Si., Apt.

TIME	AUTHOR	TITLE
13.30 - 14.05	Rifki Febriansah	Culture Optimization of <i>Streptomyces</i> sp. GMY01 Bacteria as Anticancer Agent by Chemometric Analysis
	Nikeherpianti Lolok	Isolasi Senyawa Aktif Antidiabetes Buah Mengkudu (<i>Morinda Citrifolia</i> Linn) dan Uji Mekanisme Secara In Silico
	Wa Ode Yuliastri	Aktivitas Imunomodulator dan identifikasi senyawa kimia Fraksi Bunga Rosela (of <i>Hibiscus sabdariffa</i> L.)
14.05 - 14.40	Erna Sulistyowati	In vivo evaluation of <i>Centella asiatica</i> , <i>Justicia gendarussa</i> and <i>Imperata cylindrica</i> decoction in attenuation of hypertension-induced renal damage
	Tina Rostinawati	Activity of ethanol extract of <i>Aegle marmelos</i> (buah Maja) to clinical isolate of <i>Escherichia coli</i> causing urinary tract infection
	Joni Tandil	Uji Potensi Nefropati Diabetik Daun Sisik Naga (<i>Pyrrhosia piloselloides</i> (L.) M.G Price) Terhadap Tikus Putih Jantan (<i>Rattus norvegicus</i>) Diinduksi Streptozotocin
14.40 - 15.15	Tien Wahyu Handayani	Uji Potensi Nefropati Diabetik Kulit Buah Pepaya (<i>Carica papaya</i> L.) Pada Tikus Putih Jantan (<i>Rattus norvegicus</i>) yang Diinduksi Streptozotocin
	Poppy Firzani Arifin	Safety evaluation of herbal hepatoprotector based <i>Curcuma xanthorrhiza</i> in the rat: subchronic 90 days toxicity with hematological and liver blood biochemistry as parameter
	Arista Wahyu Ningsih	Studi Formulasi dan Uji Antibakteri Ekstrak Buah Pisang Kayu Mentah
15.15 - 15.50	Dr. apt. Yuliet	Efficacy of the extract and active fraction of the leaves of <i>Hibiscus surattensis</i> L. in reducing levels of HbA1c and advanced glycation end products (AGEs) in diabetic type 2 model rat
	Dr. Apt. Yunahara	In Vitro Antioxidant And Anticholesterol of Salam (<i>Syzygium polyanthum</i> Wight.) Leaf Extract In 96% Ethanol and Water Using Spectrophotometry Method
	apt. Baiq Leny Nopitasari, M.Farm	Development of Sumbawa Honey as Tonic to Stimulate Stamina During the Covid-19 Pandemic in West Nusa Tenggara
15-50 - 16.25	Mus Ifaya	Antidiabetic potential of active Sub fractions obtained from Purified extract of <i>Lawsonia inermis</i> Leaves in Alloxan – Induced Diabetic Mice
	Finish	

ROOM IV: Biomolecular and Clinical Study on Herbal Medicine

MODERATOR : Dr. Yuli Ambarwati, S.Si., M.Si.

TIME	AUTHOR	TITLE
13.30 - 14.05	Ade Silvina	Effects of Taurine and Ethanol Extract from <i>Sargassum</i> sp. to Cervical Cancer Cells (Hela) In Vitro
	Vidia Noviyanti	Chemopreventive Activity of Biduri Root (<i>Calotropis Gigantea</i> L.) Ethanol Fraction on MCF-7 Breast Cancer Cells and Vero Normal Cells In Vitro and In Silico
	Melany Ayu Octavia	Activity of Melinjo Seed (<i>Gnetum Gnemon</i> L.) Ethanol Fraction Against Colon Cancer Cell (Widr) as Co-Chemotherapy Agent
14.05 - 14.40	Marko Jeremia Kalalo	Antidiabetic potential and pharmacological evaluation of plants bioactive compounds : a computational approach
	Silvia Andriani	Anti-Cancer Effectiveness Test of Methanol Extract Api-Api (<i>Avicennia Marina</i>) And Taurin In Vitro in Hela Cervical Cancer Culture
	Ulfa Fitriani	Quality of Life of Patients with Scientifically Formulated Diabetes Herbal Extract Capsules
14.40 - 15.15	dr. Fajar Novianto	The Effect of Physical Fitness Herbal Formula on Quality of Life: Randomized Controlled Trial
	Sadri Haryanti	Cytotoxicity effects of <i>Hippeastrum puniceum</i> bulbous extract by modulating cell cycle arrest and apoptotic induction in T47D yang Diinduksi Streptozotocin breast cancer cell lines
	Ika Yanti Marfuatush Sholikhah	In Vitro Anticancer Screening of Selected Indonesian Medicinal Plants
15.15 - 15.50	Danang Ardiyanto	Study on the Use of Herbal Medicine in the Treatment of Hyperglycemia at the "Hortus Medicus" Herbal Medicine Clinic in 2020
	Musdalifah	Sediaan Salep Bisul dari Ekstrak Daun Bungur
	Winnie Nirmala Santosa	Cardioprotective activity of <i>Nauclea subdita</i> (Korth.) Steud. Stem Bark Extract
15-50 - 16.25	Finish	

ROOM V: Functional Food and Bioinformation for biomedical Application

Moderator: Dr. Nuning Nurcahyani, M.Sc.

TIME	AUTHOR	TITLE
13.30 - 14.05	Sakina Yeti Kiptiyah	Antioxidant Activity and Microbial Contamination of <i>Kaempferia Galanga</i> .L Aqueous Extract Affected by Heat Treatment Process
	Solikah Ana Estikomah	Evaluation Antibacterial of different formulations of whey Beverages Fermented with Kefir Grains
	Kalidass A. and L. Murugan	Antimicrobial and Antispore Activities of Jambu Batu (<i>Psidium Guajava</i> L.) Leaves Extract Against Vegetative Cells and Spores of Bacillus s
14.05 - 14.40	Abdallahman Mohammad Khamees Al-Zabt	Antibacterial and Antioxidant Activities of Jambu Bol [<i>Syzygium Malaccense</i> (L.) Merr. And Perry] Leaves Extract
	Risa Nursanty	Antimicrobial Activity of Guava (<i>Psidium guajava</i> Linn.) Against Foodborne Pathogens
	Subeki	Antidiabetic Activity of Siger Rice Made from Waxy Cassava (<i>Manihot esculenta</i> Crantz) on Streptozotocin Induced Diabetic Rats
14.40 - 15.15	Samsu Udayana Nurdin	Antidiabetic Activity of Beverage Containing Guava Leaf and Turmeric Mixt
	Dr. Erlintan Sinaga, M.Kes	Bioactivity compound Prediction of <i>Saurauia vulcani</i> as immunostimulant : An In Silico Approach
	Sutopo Hadi	The Potential Application of Diphenyltin (IV) Carboxylates as a Future Disinfectant

POSTER

TIME	AUTHOR	TITLE
15.30 - 16.25	Dona Suzana	Penambatan Molekul dan Prediksi Uji Toksisitas pada Senyawa Turunan Inhibitor GATA-2 Sebagai Peningkat Transkripsi Eritropoiesis
	Dini Sri Damayanti	Potency Of Butenedioic Acid Of Soursop Leaves (<i>Annona muricata</i>) Water Extract (SLWE) As DPP4 Inhibitor
	Fitri Yuniarti, M.Si (POSTER)	Skrining Aktivitas Antibakteri dan Identifikasi Molekuler Bakteri Asam Laktat (Bal) dari Fermentasi Kubis (<i>Brassica Oleracea</i> L.) terhadap Bakteri Patogen <i>Shigella Dysenteriae</i>
	Atina Husaana, Dr. MSi., Apt.	Potensi Serbuk Jamur Tiram Putih (<i>Pleurotus ostreatus</i>)-Kaya Vitamin D Terhadap Kadar Gula Darah, Vitamin D Dan Tnf- α Pada Tikus Diabetes

**PARALLEL SESSION
DAY 2**

**International Seminar Traditional Herbal Medicine ISTHM 2021
Indonesian Medicinal Plants**

Seminar Parallel Schedule

July 9th, 2021

ROOM I: Traditional and Complementary Medicine

MODERATOR: Iqbal S.Farm., M.Sc., Apt.

TIME	AUTHOR	TITLE
13.30 - 14.05	Kartini	TLC-based Fingerprinting for <i>Centella asiatica</i> from Diverse Geographical Origins
	apt. Annisa Fatmawati, M.Farm	Histopathological Finding of Burn Healing Using Moringa Leaf (<i>Moringa oleifera</i> Lam.) extract Gel and Ethyl Acetate Fraction Gel on Rabbits
	apt. Anna Pradiningsih, M.Sc.	Aktivitas Antibakteri Gel Peeling Scrub Daun Turi (<i>Sesbania Grandiflora</i> (L.) Poir.) Sebagai Alternatif Kosmetik Pada Pandemi COVID-19
14.05 - 14.40	Elsa Yuniarti	Test of Vitamin C in Catechins Gambir (<i>Uncaria gambier</i> Roxb.) at different concentrations and doses
	Muhammad Alrazi Bin Ahmad Nor Komar	Effect Of Nutmeg (<i>Myristica fragrans</i> Houtt.) Extract On Microflora In Raw Chicken During Different Storage Temperatures And Exposure Times
	Nuning Rahmawati	The utilization of <i>Syzygium polyanthum</i> (Wight) Walp. and other plants for the treatment of hypercholesterolemia on Borneo Island of Indonesia
14.40 - 15.15	apt. Alvi Kusuma Wardani, M.Farm	Formulation of Peel-Off Mask Gel Containing <i>Moringa oleifera</i> Lam. Leaf Extract and Brightening Test
	Fanie Indrian Mustofa	The Role of Health Cadre to Increase Housewives Knowledge, Attitude and Intention in Using Jamu at Kedungjati, Grobogan
	Agus Triyono	Factors Associated with The Attitude of Herbs Utilization Among Diabetes Mellitus Patients
15.15 - 15.50	Zuraida Zulkarnain	The Effect Of Jamu Infusion Containing <i>Guazuma ulmifolia</i> (L), <i>Rheum officinale</i> (R), <i>Sonchus arvensis</i> (L) and <i>Murraya paniculata</i> (L) on Transaminase Enzymes, Blood Count and Clinical Symptoms Among Overweight and Obesity Patients
	Nikmat Ikhrom Eka Jayani	TLC-Fingerprinting and Chemometrics for Identification of Curcuma xanthorrhiza From Different Geographical Origins

ROOM II: Exploration on Potential Herbal Medicine

Moderator: Syaiful Bahri, S.Si., M.Si

TIME	AUTHOR	TITLE
13.30 - 14.05	Diah Ayu Putri Octariyanti	Eksplorasi dan Morfologi Daun Zingiberaceae yang Berpotensi Sebagai Tanaman Obat di Bandar Lampung
	Dian Kartikasari	Kuantifikasi Spektrometri Kandungan Total Flavonoid, Fenol, dan Alkaloid pada Daun Kesum (<i>Polygonum minus</i> Huds) dari Kalimantan Barat Dengan Beberapa Pelarut Berbeda
	Dyah Subositi	Genetic Diversity of Kelembak (<i>Rheum officinale</i> Baill.) Based on RAPD Molecular Markers
14.05 - 14.40	Peristiwa Ridha Widhi Astana	Potential medicinal plants in Sumatra for hemorrhoids treatment : ethnopharmacological study
	dr.Ulfatun Nisa, M.Biomed	Ethnopharmacological study of medicinal plants used to treat urination symptoms by traditional health practitioners in Eastern Indonesia
	Yuli Ambarwati	Analysis of Antioxidants on Face Mask Made of Seaweed (<i>Eucheuma cottonii</i>)
14.40 - 15.15	Tutie Djarwaningsih	Informasi Baru Tumbuhan yang Berpotensi Sebagai Obat Tradisional dari Cagar Alam Tangale, Provinsi Gorontalo-Sulawesi
	Lili Andriani	Wound-healing Activity of the Leaf Extract and Fractions of <i>Mikania micrantha</i>
	Yulianty	Variasi Anatomi Daun dan Kandungan Klorofil Tanaman Cincau Hijau yang Berpotensi Sebagai Tanaman Obat
15.15 - 15.50	Harwoko	Antihyperuricemic Effect of Flavonoid-rich Fraction of <i>Tinospora crispa</i> Stem in Hyperuricemic Mice
	Rochmah Agustrina	Kitolod (<i>Laurentia longiflora</i>) as a Promising Medicinal Plant and Widely Available in Nature
	Ardi Ardiansyah	Study on Mass Spectrometry-based Metabolomics Approach and Cytotoxic Activity of Methanolic Extracts of Sea Cucumbers
15-50 - 16.25	Emrizal	Isolation and Antibacterial Activity Test of Pure Compounds From Ethyl Acetate Fraction of Kemlaka Fruit (<i>Phyllanthus emblica</i> L.)
	Santi Perawati	The Effectiveness of Burning Cream From The Extract Of Sembung Rambat Leaves (<i>Mikania Micrantha</i> Kunth)
	Nuning Nurcahyani	Study On The Potential Of Jeruju (<i>Acanthus ilicifolius</i>) Leaf Extract As An Antifertility Agent In Mice (<i>Mus musculus</i> L)

ROOM V: Exploration on Potential Herbal Medicine

Moderator: Dr. Noviany, M.Si.

TIME	AUTHOR	TITLE
13.30 - 14.05	Surti Kurniasih	The Diversity of Medicinal Plants In Curug Ciwalen Gunung Gede Pangrango National Park
	Dzul Fithria Mumtazah	Analysis of the effect of health culture, health awareness, and product perception of consumption of herbal medicine in patients with vascular diseases in Bandar Lampung
	Dr. Risky Hadi Wibowo M.Si	Antibacterial activity of fraction ethyl acetate of <i>Mikania micrantha</i> Kunth. Leaves from, Bengkulu Province
14.05 - 14.40	Endah Setyaningrum	Collection of Medicinal Plants as Antimalarial in Liwa Botanical Garden
	Sadeeya Khan	Serai Kayu [<i>Syzygium polyanthum</i> (WIGHT) WALP.] Leaves Extract Mediated Green Synthesis of Silver Nanoparticles (SK-AgNPs) and Its Enhanced Antimicrobial Properties
	Yulianis	Potential of Sweet Orange Peel (<i>Citrus sinensis</i> (L.) Osbeck) and Ambon Banana Peel (<i>Musa paradisiaca</i> L.) as Sunscreen
14.40 - 15.15	Mudyawati Kamaruddin	Anti-Cancer of <i>Vernonia amygdalina</i> Delile with Cytotoxic Activities on WiDr Cell Lines
	Endang L Widyastuti	Anticancer Potency of Seagrass (<i>Enhalus acoroides</i>) Methanol Extraction in Hela Cell Line
	Effendy De Lux Putra	Antioxidant Activity of Water Extract of <i>Vernonia amygdalina</i> Delile. Leaves
15.15 - 15.50	Dr. Finna Setiawan, S.Farm, M.Si.	α -Amylase and α -Glucosidase Inhibition Effect of Several Indonesian Plants Extract
	Jessika Ilham	Antibacterial Activity of <i>Salmonella typhi</i> in A Combination of <i>Curcuma xanthorrhiza</i> Ethanol Extract and Bacteriocin Produced by <i>Bifidobacterium longum</i> in Vitro
	Diky Setya Diningrat	Antiviral potential of <i>Syzygium cumini</i> essential oil
15.50 -16.25	I Made Wisnu Adhi Putra	Antioxidant Synergistic Effect of The Combination of Standardized <i>Coccinia grandis</i> (L.) Voigt and <i>Blumea balsamifera</i> (L.) DC. Leaf Extracts
	Emantis Rosa	Inventarisasi Jenis – Jenis Tanaman Yang Berpotensi Sebagai Penolak Nyamuk di Sekitar Pekarangan Rumah
	Dadang Supriatna	The Effect of VCO Processing Method on Blood Glucose, Cholesterol and Pancreatic Profile of Diabetic Mellitus Rats (<i>Sprague dawley</i>)

α -AMYLASE and α -GLUCOSIDASE INHIBITION EFFECT OF SEVERAL INDONESIAN PLANTS EXTRACT

F Setiawan^{1*}, E Novita¹, S Wahyuni¹, C Artika¹, O Yunita¹, N I Jayani¹, Kartini¹

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Abstract. The aim of this research was to determine the inhibition activity of nine Indonesian plant extracts, i.e. turmeric (*Curcuma longa*), Javanese turmeric (*Curcuma xanthorrhiza*), sappan wood's (*Caesalpinia sappan*), meniran (*Phyllanthus niruri*), cat whiskers (*Orthosiphon stamineus*), celery (*Apium graveolens*), tempuyung (*Sonchus arvensis*), kepel (*Steleocarpus burahol*), and pegagan (*Centella asiatica*) against α -amylase and α -glucosidase enzymes. All of crude drugs were extracted with soxhlet apparatus using 80% ethanol. α -amylase and α -glucosidase inhibition assays were done in vitro using Sigma Aldrich method with several modifications. The result showed that meniran, sappan wood's, Javanese turmeric, turmeric, kepel, cat whiskers, celery, pegagan, and tempuyung extracts could inhibit the activity of α -glucosidase enzyme with IC₅₀ values <20, 37.36, 222.24, 285.94, 291.25, 354.61, 835.72, >1000, and > 1000 μ g/ml, respectively. Moreover, IC₅₀ value of sappan wood's and meniran extracts on α -amylase enzyme were 317.31 and 496.71 μ g/ml, respectively. At the other hand, turmeric, Javanese turmeric, tempuyung, kepel, cat whiskers, and pegagan extracts exhibited same IC₅₀ value on this enzyme, i.e. >1000 μ g/ml. In Conclusion, meniran has the best inhibition activity of an α -glucosidase enzyme. At the same time, sappan wood's has the best inhibition activity of an α -amylase enzyme.

Keyword: α -amylase assay, α -glucosidase assay, Indonesian plants .

Introduction

High blood glucose (or blood sugar) levels are a hallmark of diabetes, a chronic metabolic disease that over time causes major harm to the heart, blood vessels, eyes, kidneys, and nerves. The prevalence of diabetes is rising quickly worldwide, particularly in Asia, making it a global health emergency. Urbanization, genetic predisposition, and changes in lifestyle are the main causes of this increase. Diabetes can be managed and its effects on people and communities lessened with early detection, lifestyle changes (such as eating a balanced diet and exercising), and improved access to treatment. To address this expanding issue, public health measures that focus on management and prevention are essential, especially in Asia [1,2].

In diabetes patients, α -amylase and α -glucosidase break down carbohydrates and raise postprandial glucose levels. Postprandial hyperglycemia can be managed and the risk of developing diabetes decreased by blocking the activity of these two enzymes [3]. The aim of this research was to determine the inhibition activity of nine Indonesian plant extracts, i.e. turmeric (*Curcuma longa*), Javanese turmeric (*Curcuma xanthorrhiza*), sappan wood's (*Caesalpinia sappan*), meniran (*Phyllanthus niruri*), cat whiskers (*Orthosiphon stamineus*), celery (*Apium graveolens*), tempuyung (*Sonchus arvensis*), kepel (*Stelecocarpus burahol*), and pegagan (*Centella asiatica*) against α -amylase and α -glucosidase enzymes.

Research Method

α -Amylase Inhibitor Assay

After 10 minutes of pre-incubation at 25 °C, 200 μ l of 1% starch made in 20 mM sodium phosphate buffer (pH 6.9) was added to the samples. For ten minutes, the reaction mixtures were incubated at 25 °C. One milliliter of dinitrosalicylic acid was added, and the mixture was then incubated in a boiling water bath for five minutes to cease the reactions. A spectrophotometer (Amersham Biosciences, USA) was used to measure absorbance at 540 nm after the reaction mixtures had been allowed to cool to room temperature and diluted with water to a 1:5 ratio.

α -Glucosidase Inhibitor Assay

For 20 minutes, the mixture was pre-incubated at 37 °C. 10 μ l of 10 mM pNPG produced in 0.1 M phosphate buffer (pH 6.9) was added after pre-incubation, and the mixture was incubated for

30 minutes at 37 °C. A spectrophotometer (Amersham Biosciences, USA) was used to detect the absorbance at 405 nm after the processes were halted by adding 650 µl of 1 M sodium carbonate.

Results and Discussion

Our preliminary research results show that there is quite high activity of several herbs in inhibiting α -amylase, especially in secang and meniran plants with IC50 values of 37.36 and 20 ppm (Table 1).

Table 1. Characteristic α -amylase and α -glucosidase Inhibition from Nine Indonesian Herbs

No.	Herbal	Yield of extract (%)	IC50 Enzyme α -Glucosidase (ppm)	IC50 Enzyme α -amylase (ppm)
1	Temulawak rhizome (<i>Curcumae xanthorriza</i>)	21.72	225.25	>1000
2	Kepel leaves (<i>Stelecocarpus burahol</i>)	7.27	201.25	>1000
3	Turmeric Rhizome (<i>Curcumae domestica</i>)	19.75	285.94	>1000
4	Meniran Herb (<i>Phyllanthus niruri L</i>)	11.83	<20	496.71
5	Secang wood (<i>Caesalpinia sappan</i>)	13.21	37.36	317.31
6	Tempuyung leaves (<i>Sonchus Arvensis</i>)	13.73	>1000	>1000
7	Herbs of Celery (<i>Apium graveolens L.</i>)	28.52	835.72	>1000
8	Pegagan herb (<i>Centella asiatica L.</i>)	30.48	>1000	>1000
9	Leaves of cat whiskers (<i>Orthosiphon stamineus</i>)	18.15	354.61	>1000

According to a few studies, Acarbose's α -amylase and α -glucosidase inhibitory activity can vary from 55% to 82%, depending on the conditions of the experiment [4-6]. The enzyme inhibitors now used to control PPHG are acarbose, miglitol, and voglibose. While miglitol and voglibose exclusively inhibit α -glucosidase, acarbose inhibits both α -amylase and α -glucosidase. Despite being useful in managing PPHG, these inhibitors' gastrointestinal adverse effects make them unsuitable for long-term use [7,8].

The findings of this investigation support those of earlier studies on the presence of several active compounds from plant extracts, including tannins, flavonoids, polysaccharides, saponins, and terpenes. These compounds are known to have inhibitory activity against the enzymes α -amylase and α -glucosidase, which suggests that they may be used as potential medications and functional foods to prevent or treat diabetes [3,9].

Conclusion

Secang wood (*Caesalpinia sappan*) and Meniran Herb (*Phyllanthus niruri* L) extract showed the strong inhibitory activity to α -glucosidase enzymes and α -amylase enzymes. Both of plant was a very potential candidate to develop as antidiabetic treatment by lowering postprandial glucose.

Reference

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