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October 12th, 2017
Our reference
024/MIPS3/ACC/X/2017

ACCEPTANCE LETTER

Dear, Mr./ Mrs./ Miss., **Aminah, Zainal Abidin, dan Harti Widiastuti**

Thank you for your interest in the 3rd Makassar International Symposium on Pharmaceutical Science 2017, and the submission of your abstract.

We are pleased to advise that your paper based on abstract entitled:

Analysis of Total Phenolic and Flavonoid Content of Patikala Leaf Extract (Etlingera elatior (Jack).Smith)

has been **accepted** by the committee.

Therefore, on behalf of the committee, we would like to formally invite you to attend the 3rd MIPS to present your paper on **Friday – Saturday/ November 3-4, 2017, Four Points by Sheraton Hotel, Makassar, South Sulawesi, Indonesia**.

Thank you, and be sure to save your notification for reference in case of a problem or question. We are looking forward to meeting you on November 3 – 4, 2017.

Makassar, South Sulawesi.
Best regards,

Chair,

Firzan Nainu, M.Biomed.Sc., Ph.D., Apt

The Committee of The 3rd Makassar International Symposium on Pharmaceutical Sciences (MIPS) 2017. e-mail: mips.farmasi@unhas.ac.id cc mips.farmasi@gmail.com

3rd MiPS

ABSTRACT BOOK

Third Makassar International Symposium on Pharmaceutical Sciences

Emerging **Innovations** in **Drug Discovery, Development** and **Delivery**

November 3 - 4, 2017
Four Points by Sheraton Hotel
Makassar, South Sulawesi, Indonesia

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Chair of
3rd MIPS, 2017

Distinguished Speakers,
Fellow Colleagues,
Ladies and Gentlemen,

It gives me a great pleasure welcoming you for the 3rd Makassar International Symposium on Pharmaceutical Sciences (3rd MIPS) 2017. 3rd MIPS is one of our region's most important events dedicated to further enrich the field of pharmaceutical sciences. Upon the success of the 1st and the 2nd MIPS in 2009 and 2013, respectively, we are hoping that this event, the 3rd MIPS, would experience the same accomplishment as its predecessors.

Excellent science shall always be the foundation upon which meaningful and impactful outcomes are derived and this, in time, would nurture the best minds in our scientific environment in Indonesia. To support this notion, in the 3rd MIPS, we are going to discuss comprehensive efforts in basic pharmaceutical sciences as well as its applications focusing on "Emerging Innovations in Drug Discovery, Development, and Delivery". It is a very relevant topic today, and we will get to hear from our distinguished speakers on the cutting-edge work that is set to make a difference in the years ahead. In addition to that, numerous oral and poster presenters from undergraduate and graduate students as well as from researchers of diverse institutions in Indonesia and abroad shall bring a joy and if possible, thrust an impact, on the knowledge of recent achievements in pharmaceutical sciences spanning from Pharmacology and Toxicology to Social and Administrative Pharmacy.

The success of this symposium will require the support of all participants and to a larger extent, academic institutions, research centres, pharmaceutical industries, and other relevant stakeholders in Indonesia. As the chairman of 3rd MIPS, I am hoping that this symposium would play an important role in bringing the scientific community of pharmaceutical sciences and relevant fields to closely work together for a better future.

It leaves me now to wish you an enjoyable symposium and hope that you will take the time to also participate in the many activities here at the biggest city in the Eastern part of Indonesia over the next few days.

Best Regards,

Firzan Nainu

Welcome to Makassar.

Welcome to Third Makassar International Symposium on Pharmaceutical Sciences (3rd MIPS).

Dean of
Faculty of Pharmacy,
Hasanuddin University

It is my pleasure to welcome all of you to this international symposium. We hope that this event brings contributions for developments of science and technology, especially pharmaceutical sciences which have been experiencing very rapid progressions. By participating in 3rd MIPS, we believe that many information can be obtained and shared with our community.

Faculty of Pharmacy Hasanuddin University (Unhas) has been always composing efforts to surge the quality of pharmaceutical sciences through increasing of learning and teaching quality, strengthening of research, and augmenting community service programs. To disseminate those efforts to the public, MIPS is taken place.

As you may know that this MIPS is the third. The 1st MIPS was held in 2009 while the 2nd MIPS was performed in 2013. Different from the previous symposium, the 3rd MIPS is brought a wider and holistic theme, "Emerging Innovation in Drug Discovery, Development, and Delivery". This theme is lifted to give spirit to create and innovate in providing solutions to solve problems found in health and pharmaceutical fields.

On behalf of Faculty of Pharmacy Unhas, I would like to convey my gratitude to Head of National Agency of Drug and Food Control, Ir. Penny Kusumastuti Lukito, MCP., Ph.D., as keynote speaker in this symposium. Also, thank you for Rector of Universitas Hasanuddin, Prof. Dr. Dwia Aries Tina Pulubuhu, M.A., who has been supporting this event so that it can be conducted in a smooth way. To all invited speakers, thank you for your kind participations in disseminating your creation and innovation.

Of course, another key to this event success depends on participants and sponsor involvements. For all participants and sponsors who have taken part, my gratitude to all of you. I would also like to extend my gratitude to all committee members for their hard works and have made this symposium possible.

I do believe that this symposium is too short for us to explore and discuss many aspects of pharmaceutical sciences. However, we hope this moment could be a starting point to catalyse the further steps to strengthen our roles in advancing community quality of life.

Thank you.

Gemini Alam

Rector of
Hasanuddin University

Assalamu'alaykum Warahmatullahi Wabarakatuh.

First of all, we must thank God since we believe that the success of our event depends on His Mercy.

It gives me a great pleasure to welcome all of you to the Third Makassar International Symposium on Pharmaceutical Sciences (3rd MIPS). We hope that this symposium brings many new insights and knowledge.

The rapid progress of science and technology needs the ability to adapt with all of the changes. Pharmaceutical sciences are one of the fields experiencing very rapid development. Disease variability has a consequence to us to provide the best quality medicine having effective works and minimal adverse effects.

Universitas Hasanuddin is always to support the efforts to develop science and technology, includes pharmaceutical sciences. Universitas Hasanuddin also provides facilities to increase our research quality hoped to promote solutions that can be utilized to solve problems found in communities.

On September 10, 2017, Universitas Hasanuddin just celebrated its 61st year. It prides itself as the oldest and biggest Indonesian State University, especially in eastern part of the country. In its journey, Universitas Hasanuddin has faced many achievements. Universitas Hasanuddin must promote, develop, apply and disseminate science and technology, art, and culture for the sake of benefits of Indonesia and the world. By this responsibility, Universitas Hasanuddin will totally support this event and other programs that can be used to improve quality of life of the community. Universitas Hasanuddin provides the best human resources in Indonesia. We have at least 14 center of excellence from 14 faculties which is supported by around 1600 teaching and research staff (65% PhD, 30% Professors).

By this fact, Unhas has been building its self-management capacity to assure its role as a cultural and excellent institution in developing harmonized reality without neglecting the interconnectivity with the strategic environment

In this special moment, I would like to thank Head of National Agency of Drug and Food Control who has been joining this symposium. In the future, Unhas will always be ready to become a partner in collaborating for providing health and safe food and drug.

I also would like to give my appreciation to Dean of Faculty of Pharmacy, Universitas Hasanuddin, Prof. Dr. Gemini Alam, M.Si., Apt. and all of the committees for your hard works to succeed this symposium.

For all of invited speakers and participants, I wish you all enjoying your time in Makassar.

Thank you.

Wassalamu'alaykum Warahamatullahi Wabarakatuhu.

Dwia Aries Tina Pulubuhu

POSTER
Presentations

3rd MiPS

Third Makassar International Symposium on Pharmaceutical Sciences

Emerging **Innovations** in **Drug Discovery, Development** and **Delivery**

PP.1 **Nurhasni Hasan, Ade Nurul Amalia, Ariansyah, Sri Wahyuni, Sandi Kurniawan, Erwin Gunawan**

Evaluation of Dental Pasta Nitric Oxide Donor Nanoparticle

PP.2 **Aminah, Zainal Abidin, dan Harti Widiastuti**

Analysis of Total Phenolic and Flavonoid Content of Patikala Leaf Extract (*Etlingera elatior* (Jack). Smith)

PP.3 **Andi Lilis Sugiana, Muhammad Iman Rachmat, Andi Nunung Nanrang, Sukriani Kursia**

Prevent Cancer with Fungi "Utilization of Secondary Metabolite Endophytic Fungi of *Moringa oleifera* L. with Free Radical Scavenging Profile"

PP.4 **Dewi Melani Hariyadi, Esti Hendradi**

Ciprofloxacin-Alginate Microspheres: Effect of Concentration of Alginate and $CaCl_2$ on The Microspheres Characteristics Produced by Aerosolization

PP.5 **Ethsa Matitaputty, Andi Wisda, Jesi Febriani Tiku, Nur Ovikasari Rhamadani Sofyan, Jainer Pasca Siampa**

Free Radical Scavenging Profile of *Garcinia mangostana* Extract: Phytosome Drug Delivery Approach to Enhance Penetration

PP.6 **Fery Indradewi A., Andi Nafisah TAM., Mei Kurniawati T., Hasnawati**

Shower Gel Formulation of Eucheuma cottonii Seaweed Powder

PP.7 **Haeriah, Muhammad Rahmatullah, Andi Indardaya, Emilia Utomo, Novianti, Sartini**

Formulation and Evaluation of Chitosan – *Aloe vera* L. Extract Film as Diabetic Ulcers Supportive Therapy

PP.8 **Hestiary Ratih, Sundani Nurono Soewandhi, Jessie Sofie Pamudji, Fikri Alatas**

Improving Mechanical Properties of Telmisartan Through the Formation of Telmisartan and Oxalic Acid Co-Crystal by Ultrasound Assisted Cocrystallization from Solution (USSC) Method

PP.9 **Ida Adhayanti, Tahir Ahmad, Santi Sinala, Alfrida Monica S.**

Determination of Total Phenolic Content (TPC), Sun Protective Factor (SPF) and Antioxidant Activity of Pisang Ambon (*Musa paradisiaca* L.) Peel Extract

PP.10 **Jumain, Santi Sinala**

Formulation of Vaginal Cleansing Soap Contains Red Betel Leaves (*Piper crocatum* Ruiz & Pav.) and Its Activity Tests on The Growth of *Candida albicans*

Analysis of Total Phenolic and Flavonoid Content of Patikala Leaf Extract (*Etlingera elatior* (Jack).Smith)

Aminah, Zainal Abidin, dan Harti Widiastuti
University of Muslim Indonesia, Makassar, Indonesia
aminah.hamzah87@gmail.com

Patikala (*Etlingera elatior* (Jack) Smith) is an herbal plant that belongs to the family of Zingiberaceae with the genus Alpinieae. This plant contains bioactive compounds, such as; flavonoids, terpenoids, saponins, tannins, carbohydrates, and phenolics. So, we tested the total phenolic and flavonoid content of patikala leaf extract using various types of solvent. Total flavonoid testing used 1,2% AlCl3 and 120 mM potassium acetate reagent with quarsetin comparator, while total phenolic using Folin Ciocalteau (1: 9) and NaHCO3 7.5% reagent with gallic acid comparator. The determination of the content was done using the UV-Vis spectrophotometric method. The results showed that the total flavonoid content of water extract, ethanol extract and purification leaf extract were 24.31 mgQE/g, 26.41 mgQE/g, and 46.5 mgQE/gr, respectively. While the total phenolic content of water extract, ethanol extract and purine leaf purification extract were 90.38 mgGAE/g, 98.94 mgGAE/g, and 228.54 mgGAE/g, respectively.

Keywords: Patikala (*Etlingera elatior* (Jack) Smith), flavonoid, phenolic, UV-Vis spectrophotometric

Analysis Of Total Phenolic And Flavonoid Content Of Patikala Leaf Extract (*Etlingera Elatior* (Jack).Smith)

Aminah, Zainal Abidin, dan Harti Widiastuti
Universitas Muslim Indonesia
E-mail : aminah.hamzah87@gmail.com

ABSTRACT

Patikala (Etlingera elatior (Jack) Smith) is an herbal plant that belongs to the family of Zingiberaceae with the genus Alpinieae. This plant contains bioactive compounds, such as; flavonoids, terpenoids, saponins, tannins, carbohydrates, and phenolics. So we tested the total phenolic and flavonoid content of patikala leaf extract using various types of solvent. Total flavonoid testing used 1,2% $AlCl_3$ and 120 mM potassium acetate reagent with quarsetin comparator, while total phenolic using Folin-Ciocalteau (1: 9) and $NaHCO_3$ 7.5% reagent with gallic acid comparator. The determination of the content was done using the UV-Vis spectrophotometric method. The results showed that the total flavonoid content of water extract, ethanol extract and purification leaf extract were 24.31 mgQE/g, 26.41 mgQE/g, and 46.5 mgQE/gr, respectively. While the total phenolic content of water extract, ethanol extract and purine leaf purification extract were 90.38 mgGAE/g, 98.94 mgGAE/g, and 228.54 mgGAE/g, respectively.

Key words *: Patikala (Etlingera elatior* (Jack) Smith*), flavonoid, phenolic, UV-Vis spectrophotometric*

A. Introduction

Patikala *(Etlingera elatior* (Jack) Smith) is herbs are included family Zingiberaceae the genus Alpinieae. Type plant this is original from Indonesia and Malaysia, with some synonym namely; *Etlingera elatior, Alpinia elatior, Elettaria speciosa, Nicolaia elatior, Nicolaia speciosa,* and *Phaeomeria speciose* (Chan E. W. C., *et al*., 2011).

Plant this contain compound bioactive, such as; flavonoids, terpenoids, saponins, tannins, carbohydrates, and phenolic and extract plant this has investigated have activity antioxidants. Where, leaves plant patikala has investigated contain compound phenolic, have activity damping radical free and activity power reduction iron more big compared flower and rhizome (Chan E. W. C., *et al*., 2011).

Phenol and flavonoids are compound class polyphenols known have character as catcher radical free, inhibits enzyme hydrolysis and oxidative, and work as antiinflammatory. Aim research this is analyze levels phenolic and total flavonoids from extract leaf patikala *(Etlingera elatior* (Jack)Smith) is UV-Vis spectrophotometry.

B. Methods

1. **Material**
   Leaf Patikala *(Etlingera elatior* (Jack) Smith), 96% Ethanol, Ethyl Acetate, chloroform, hexane, *Folin-Ciocalteau,* sodium bicarbonate, Aluminum Chloride, Potassium acetate and Distilled water.
2. **Procedur**
   a) Processing Sample
   1. Extract Sample With Ethanol extract

Powder a 30 gram sample is added with 250 ml ethanol, then macerated for 24 hours, and do process remaserasi several times. Extract ethanol liquid obtained, then do filtering with Buchner funnel and paper strain for separate filtrate from dregs to in Erlenmeyer flask. Filtrate evaporated to obtained extract thick, then calculated the yield obtained.

2. Extract Sample With Water extract
   Powder a sample of 20 grams of added with 200 ml of distilled water, then heated on waterbath temperature of 90^{o}C for 15 minutes, then results extraction obtained difreezedry to obtained dried aqueous extract
3. Purification Extract
   Extract ethanol thick as much as 20 grams included to in 100 ml of boiling water then cooled in refrigerator for 12 hours. After that filtered and extracted liquid-liquid with or ethyl acetate (each 3 x 100 ml). Extract ethyl acetate purified evaporated to obtained extract thick (Hajnos MW, *et. al.*, 2007 and Dai J., *et. al.*, 2010)

b) Creation Solution Sample Water extract, extract Ethanol And Extracts Terpurifikasi Leaf Patikala *(Etlingera elatior* (Jack) Smith)

Solution water extract, extract ethanol and extract purified leaf Patikala *(Etlingera elatior* (Jack) Smith) made with way weighing 5 mg of extract samples were dissolved with 10 mL of distilled water (500 ppm) and dilution is performed at 200 ppm.

c) Determination of Levels of Total Phenolic

1) Creation Solution Standard Galat Acid.

Solution standard Galat Acid 1000 ppm created with weighing 10 mg of galat acid dissolved with aquadest to a volume of 10 mL. From the stock solution is pipetted as much 0, 25 ml of diluted with aquadest to a volume of 25 mL to generated concentration of 10 ppm and then made concentration of 1, 2, 3, 4, 5 and 6 ppm.

2) Determination Long Wave Maximum (λmaks)

Maximum wavelength Galat Acid do with me *running* solution 1 ppm gallic acid at long range waves of 710-755 nm. Absorbance The maximum earned on long wave 755 nm.

3) Measurement Solution Standard Galat Acid

For each concentration of 1, 2, 3, 4, 5, and 6 ppm 0.5 ml, was added with 2 mL of reagent *Folin-Ciocalteau* (1:9) shaken / in the vortex and 3 minutes left, after that added 2 mL of $NaHCO_3$ 7, 5% shake to homogeneous and let stand for 30 minutes. Measuring uptake on long wave 755 nm, then created curve calibration, relationships between concentration Galat Acid (mg/L) with absorbance.

4) Determination of Total Phenolic of Water extract, Ethanol extract And purification Extracts Leaf Patikala *(Etlingera elatior* (Jack) Smith)

The method used in accordance with method of Stankovic M.S. (2011) with a little modification. Dipipet 0.5 ml solution water extract, extract ethanol and extract purified leaf Patikala *(Etlingera elatior* (Jack) Smith) from concentration of 200 ppm, was added with 2 mL of reagent *Folin-Ciocalteau* in aquadest (1 : 9) whipped and left 3 minutes, tam even 2 mL $NaHCO_3$ 7,5% shake to homogeneous and be silenced for 30 minutes on temperature room. Measuring uptake on long wave 755 nm which will give color complex blue. Then created 3 repetitions so levels phenolic total revenue results

obtained as mg equivalent Galat Acid/g extract.

d) Determination of Total Content Flavonoid

1) Preparation of Quarcetin Standard Solutions

Quarcetin weighed 10 mg, dissolved with aquadest and be sufficient volume up to 10 mL (1000 ppm). Solution stock piped as many as 1 mL, add with aquadest up to 10 mL (100 ppm). Created quarcetin with concentration of 3, 5, 7, 9, 11 and 13 ppm.

2) Determination Long Wave Maximum (λ_{max})

Long wave maximum quarcetin do with me *running* solution quarcetin 3 ppm on long range wave 300 - 500 nm. Absorbance The maximum earned on long wave 435 nm.

3) Measurement Solution Standard Quercetin

This solution for each 1 mL, added 1 mL of $AlCl_3$ 10% and 1 mL of 1 M CH_3COOK, next homogenized and The set aside for 30 minutes. Absorbance solution aforementioned then be measured on long wave maximum 415 nm. And then created curve raw and obtained equation line straight

4) Determination of Total Phenolic Water Extract, Extract Ethanol And Purification Extracts Leaf Patikala *(Etlingera elatior* (Jack) Smith)

The method used in accordance with method of Chanda, SV, *et al.* (2010) with a little modification. The piped as much 1 mL of solution from each extract, added 1 mL of $AlCl_3$ 10% and 1 mL of CH_3COOK 1M, next homogenized and The set aside for 30 minutes. Measuring uptake on the long wave maximum 435 nm. Done three repetitions so levels flavonoid derived results obtained unpacking mg equivalent quarcetin/g extract.

C. Results and Discussion

Leaf patikala used as sample dried more first for reduce levels water to influence weight sample, where available the water content of the sample could seen on table 1., Besides it was also determined levels ash shows amount content metallic minerals in sample becomes wrong one standard simplicia good with levels Low ash. Where levels ash sample could seen on Table 2.

Table 1. Results Depreciation Leaf Water Content Patikala

Replication	Weight Early (g)	Weight End (g)	Water content %	Average (%)
I	3.0080	2.6541	11,765	11.79
II	3.0065	2.6586	11,572	
III	3,0053	2.6431	12,052	

Table 2. Results Depreciation Levels Abu Leaves Patikala

Replication	Weight Early (g)	Weight End (g)	Ash Content%	Average (%)
I	2,0073	0.2273	11.32	11.31
II	2,0031	0.2256	11.26	
III	2,0079	0.2282	12.36	

Leaf patikala which has dried, then extracted with 3 types method extraction and 3 types extract, namely method maceration with ethanol, methods infusion with water and method purification with ethyl acetate. Selection method and different extract for get type extract with levels phenolic and the greatest total flavonoids. Results each extraction could seen on table 3, 4, and 5.

Table 3. Results extraction method maceration with ethanol

Replication	Weight Samples (g)	Weight Extract	% Rendamen	Average (%)
I	30	2.16 g	7.20	7.04
II	30	2.15 g	7.16	
III	30	2.03 g	6.77	

Table 4. Results extraction method infusion with water

Replication	Weight Samples (g)	Weight Extract		% Rendamen	Average (%)
		Before cleaning Frezee	After cleaning Frezee		
I	20	100 mL	1.2174 g	6.09	5.93
II	20	100 mL	1.1996 g	6:00	
III	20	100 mL	1.1396 g	5.70	

Table 5. Results extraction method purification with ethyl acetate

Replication	Weight Samples (g)	Weight Extract	% Rendamen	Average (%)
I	3	0.17 g	5.66	5.33
II	3	0.15 g	5.00	
III	3	0.16 g	5.33	

Each of these extracts, tested by determining the content of phenolic and flavonoid levels, in which the compounds that have the ability of oxidation reactions are phenolic and flavonoid group compounds. The content of phenolic compounds, and flavonoids can be seen in tables 6, 7, 8, 9, 10, and 11.

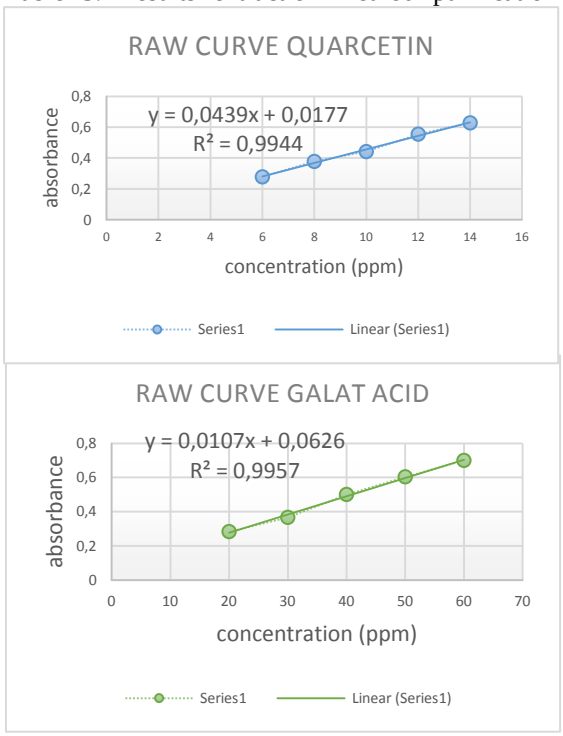

Figure 1. Results of the Galat Acid Curve Calibration at 755 nm Wavelength.

Table 6. Results Measurement absorbance and levels phenolic extract ethanol

Replication	Concentration (ppm)	Absorbant	Content of Flavonoids (mgGAE/gram)	Average (mgGAE/gram)
I	200	0, 273	98.32	98.94
II	200	0, 271	97.39	
III	200	0, 279	101.12	

Table 7. Results Measurement absorbance and levels phenolic water extract

Replication	Concentration (ppm)	Absorbant	Content of Flavonoids (mgGAE/gram)	Average (mgGAE/gram)
I	200	0, 251	88.04	90.38
II	200	0, 258	91.31	
III	200	0, 259	91.78	

Table 8. Results Measurement absorbance and levels phenolic extract ethyl assets purification

Replication	Concentration (ppm)	Absorbant	Content of Flavonoids (mgGAE/gram)	Average (mgGAE/gram)
I.	200	0, 551	228.23	228.54
II	200	0, 554	229.63	
III	200	0, 550	227.76	

Figure 2. Results of Quercetin Calibration Curve At 435 nm Wave Length.

Table 9. Results Measurement absorbance and levels of flavonoids extract ethanol

Replication	Concentration (ppm)	Absorbant	Content of Flavonoids (mgQE/gram)	Average (mgQE/gram)
I.	200	0, 259	27, 55	26, 41
II	200	0, 241	25, 49	
III	200	0, 247	26, 18	

Table 10. Results Measurement absorbance and flavonoid content of aqueous extracts

Replication	Concentration (ppm)	Absorbant	Content of Flavonoids (mgQE/gram)	Average (mgQE/gram)
I.	200	0, 233	24, 58	24, 31,
II	200	0, 229	24, 12	
III	200	0, 230	24, 24	

Table 11. Results Measurement absorbance and levels of flavonoids extract ethyl acetate purification

Replication	Concentration (ppm)	Absorbant	Content of Flavonoids (MGQ E / gram)	Average (MGQ E / gram)
I.	200	0, 413	45, 13	46.50
II	200	0, 452	49, 58	
III	200	0, 410	44, 79	

Based on results testing obtained that purification extract ethyl acetate have potential antioxidants more big compared extract the other, it this because of content compound phenolic and flavonoidnya also the biggest.

D. Conclusion

Extract ethanol, water and ethyl acetate purified leaf patikala contain compound phenolic and flavonoids, respectively as follows: 98.94; 90.38; 228.54 mgGAE/g and 26.41; 24.31; 46.50 mgQE/gram

E. Acknowledgement

- This research could be successful because of the assistance of The Directorate Research and Community Service, The Directorate General to Strengthen Research and Developtment, and The Ministry of Research Technology and Higher Education, had provided research funding through research Grant of applied product, didn't forget to said thanks to Research Institute (LP2S) UMI, and Pharmaceutical Chemistry Laboratory OF UMI

F. References

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3rd MIPS
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Makassar, 3-4 November 2017
Secretariat: Jl. Perintis Kemerdekaan KM.10, Tamalanrea, Makassar, South Sulawesi, Indonesia, 90245website: http://mips.farmasi.unhas.ac.id; e-mail: mips.farmasi@unhas.ac.id

Analysis Of Total Phenolic And Flavonoid Content Of Patikala Leaf Extract (*Etlingera Elatior* (Jack).Smith)

Aminah, Zainal Abidin, dan Harti Widiastuti
University of Muslim Indonesia

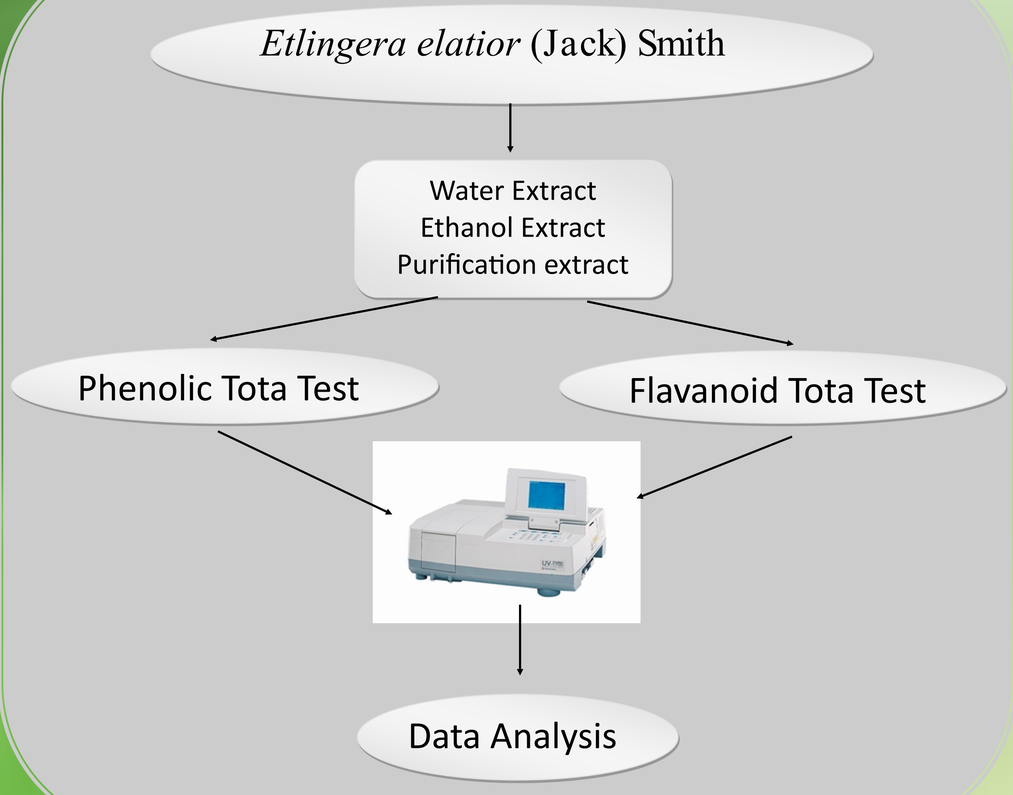
ABSTRAK

Patikala (Etlingera elatior (Jack) Smith) is an herbal plant that belongs to the family of Zingiberaceae with the genus Alpinieae. This plant contains bioactive compounds, such as; flavonoids, terpenoids, saponins, tannins, carbohydrates, and phenolics. So we tested the total phenolic and flavonoid content of patikala leaf extract using various types of solvent. Total flavonoid testing used 1,2% $AlCl_3$ and 120 mM potassium acetate reagent with quarsetin comparator, while total phenolic using Folin-Ciocalteau (1: 9) and $NaHCO_3$ 7.5% reagent with gallic acid comparator. The determination of the content was done using the UV-Vis spectrophotometric method. The results showed that the total flavonoid content of water extract, ethanol extract and purification leaf extract were 24.31 mgQE/g, 26.41 mgQE/g, and 46.5 mgQE/gr, respectively. While the total phenolic content of water extract, ethanol extract and purine leaf purification extract were 90.38 mgGAE/g, 98.94 mgGAE/g, and 228.54 mgGAE/g, respectively.

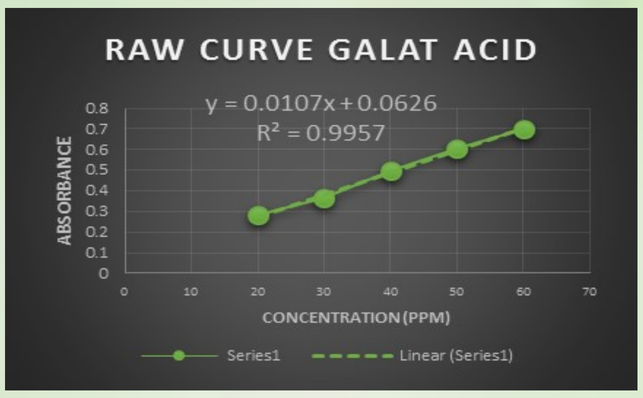
Introduction

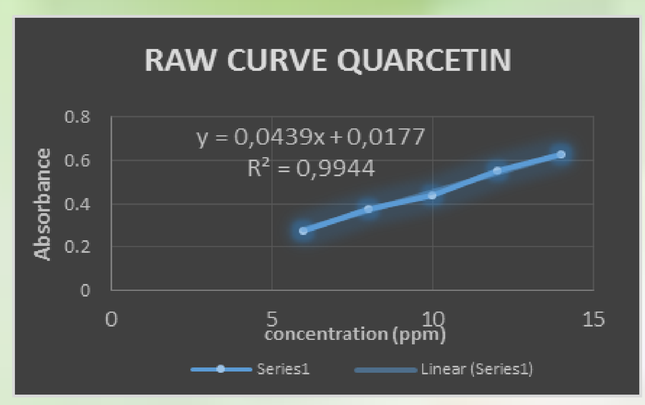
Patikala *(Etlingera elatior* (Jack) Smith) is herbs are included family Zingiberaceae the genus Alpinieae. Plant this contain compound bioactive, such as; flavonoids, terpenoids, saponins, tannins, carbohydrates, and phenolic and extract plant this has investigated have activity antioxidants. Where, leaves plant patikala has investigated contain compound phenolic, have activity damping radical free and activity power reduction iron more big compared flower and rhizome (Chan E. W.

Methods



Results





Results total phenolic and flavonoid from paticala leaf extract

Test / Extract	Water	Ethanol	Purification
Phenolic Total	90.38 (mgGAE/g)	98.94 (mgGAE/g)	228.54 (mgGAE/g)
Flavonoid Total	24, 31 (mgQE/g)	26, 41 (mgQE/g)	46.50 (mgQE/g)

Conclusion

Extract ethanol, water and ethyl acetate purified leaf patikala contain compound phenolic and flavonoids, respectively as follows: 98.94; 90.38; 228.54 mgGAE/g and 26.41; 24.31; 46.50 mgQE/gram

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