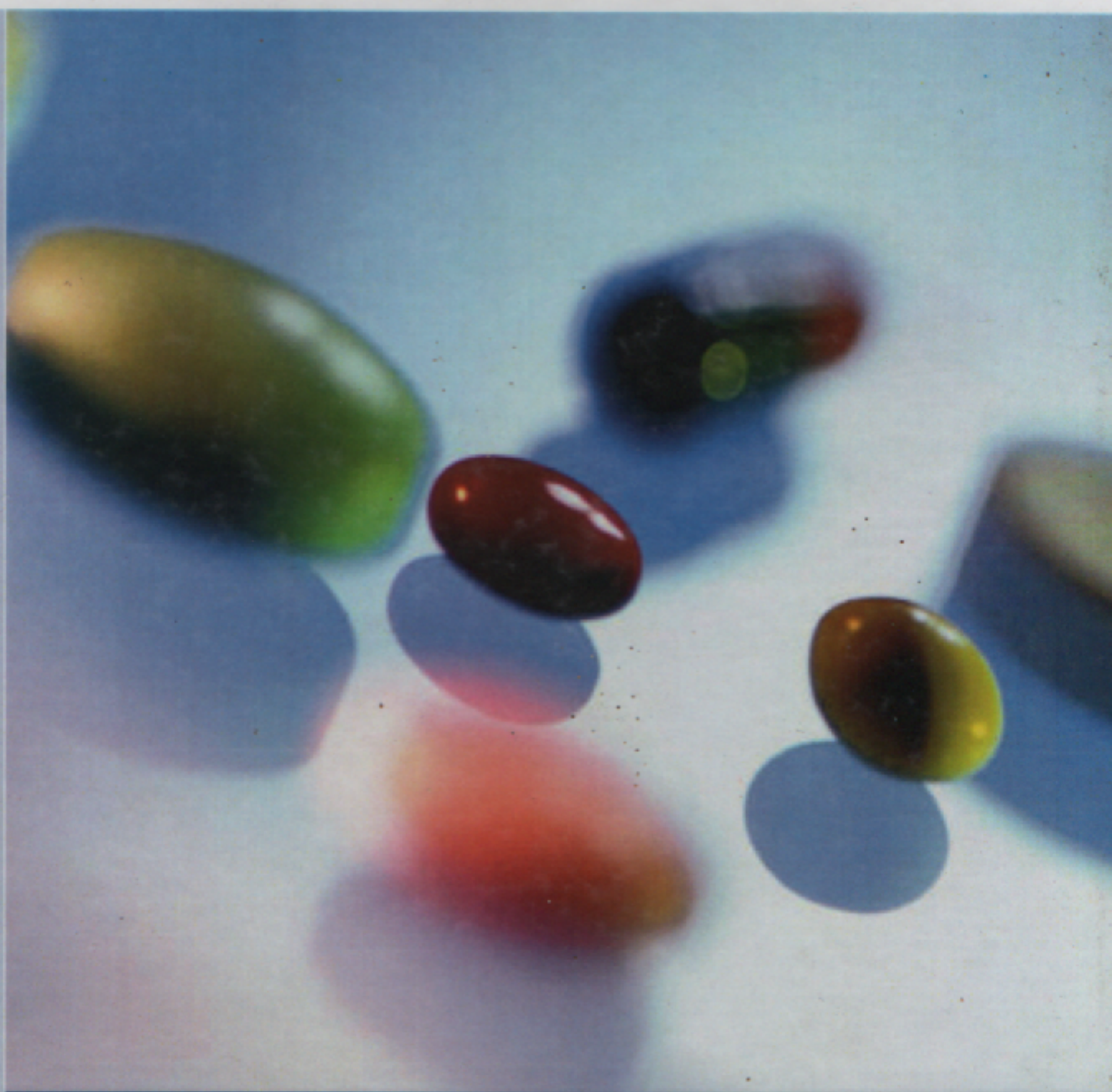




PROCEEDING

International Seminar Of Natural Product

Incorporation of complementary medicines and natural product education in pharmacy curriculum: Opportunities and challenges



Organized by:

Sekolah Tinggi Ilmu Farmasi Makassar
Akademi Farmasi Kebangsaan Makassar



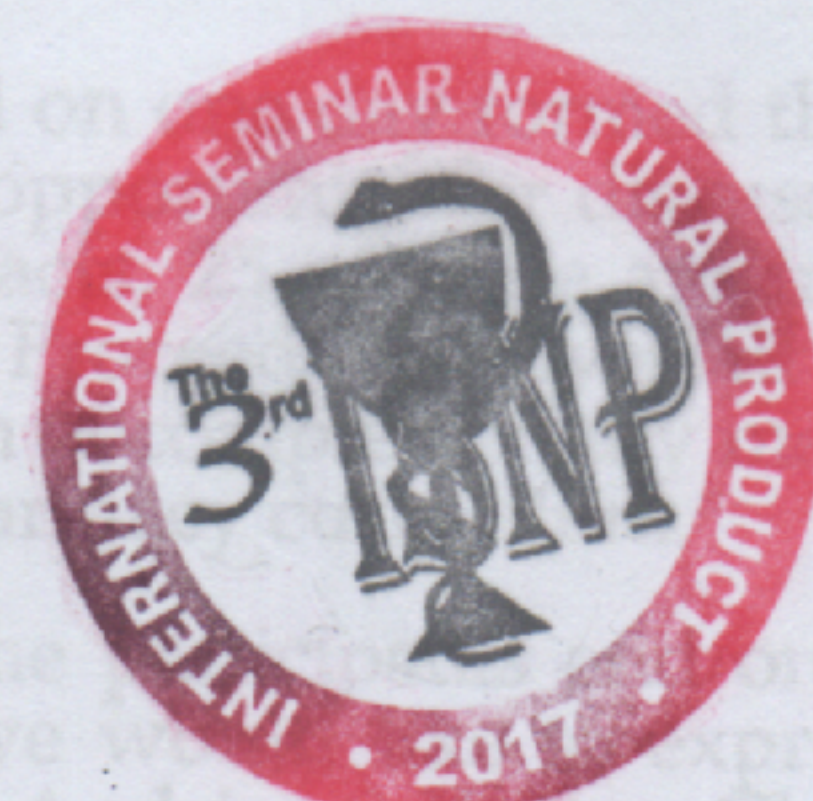


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Dalton Hotel Makassar
April 1st, 2017

Sekolah Tinggi Ilmu Farmasi Makassar
Akademi Farmasi Kebangsaan Makassar



Chairman of the Organizing Committee



The proceeding contains the papers to be presented at the International Seminar of Natural Product (ISNP) to be held in Makassar during April 01st 2017.

The present 3rd Proceedings includes the papers presented at the seminar.

The 53 abstracts that were presented on one day formed the heart of the seminar and provided ample opportunity for discussion. Of the total number of presented abstracts, 25 of these are included in the this Proceeding. The seminar Proceedings cover all aspects on key issues related to incorporation of complementary medicines and natural product education in pharmacy curriculum.

We appreciate the contribution of the participants and on behalf of all the conference participants, we would like to express our sincere thanks to plenary speakers: Andries S Koster, Chieh-Hsi Wu, Takeshi Masuda, Mahdi Jufri, Orawin Prangsaengtong, Ji-Ye Kee, Yue Zhou, Agung Endro Nugroho, and Besse Hardianti and everybody who helped to make conference success and especially to our sponsors:

Ikatan Apoteker Indonesia

Kalla Grup

Wardah

All in all, the Seminar was very successful. The plenary lectures and the progress and special reports incorporation of complementary medicines and natural product education in pharmacy curriculum. Also, included among the speakers were several young scientists, namely, students, who brought new perspectives to their fields. I hope this proceedings will promote the interdisciplinary exchange of knowledge and ideas in Natural Products.

Nursamsiar
Seminar Chairperson

Welcome Speech by AlMarisah Madani Foundation



First of all, on behalf of Sekolah Tinggi Ilmu Farmasi (STIFA) Makassar, Akademi Farmasi (AKFAR) Kebangsaan Makassar, please allow me to extend a very warm welcome to all distinguished guests, invited speaker and all participants of the the 3rd International Seminar of Natural Product with the theme "Incorporation of complementary medicines and natural product education in pharmacy curriculum: Opportunities and challenges".

This one day international seminar was organized by STIFA Makassar and AKFAR Kebangsaan under AlMarisah Madani Foundation. This Seminar covers about drug discovery and its development gained from natural resources and also there are various topic to be presented, and each of them is closely related and very important for treatment some diseases of human being particularly for those who live in developing countries like Indonesia.

As you might be known natural products have been long regarded as sources of medicines and Indonesian traditional medicines offer an unique opportunity for drug discovery, therefore, We expect this International seminar can enhance the sharing experiences between scientific basic research as an input to enhance drug discovery that necessary to be conducted. And we hope this International Seminar will provide a platform for International and national researches and whole experts to networking each other. Furthermore, build research collaborations for the sake of sustainable development and future lives of our generation

Lastly, I would like to thank the all organizing committee of this International seminar who have been make outstanding effort to succeed this symposium, I would like also extend my appreciation to Invited speaker from Netherland, Taiwan, Japan, Korea and Indonesia for contributing to this important International gathering. I wish you all enjoying your time in Makassar and thank you very much for your kind attention and cooperation.

Drs. Sahibuddin A Gani
Head of Fondation



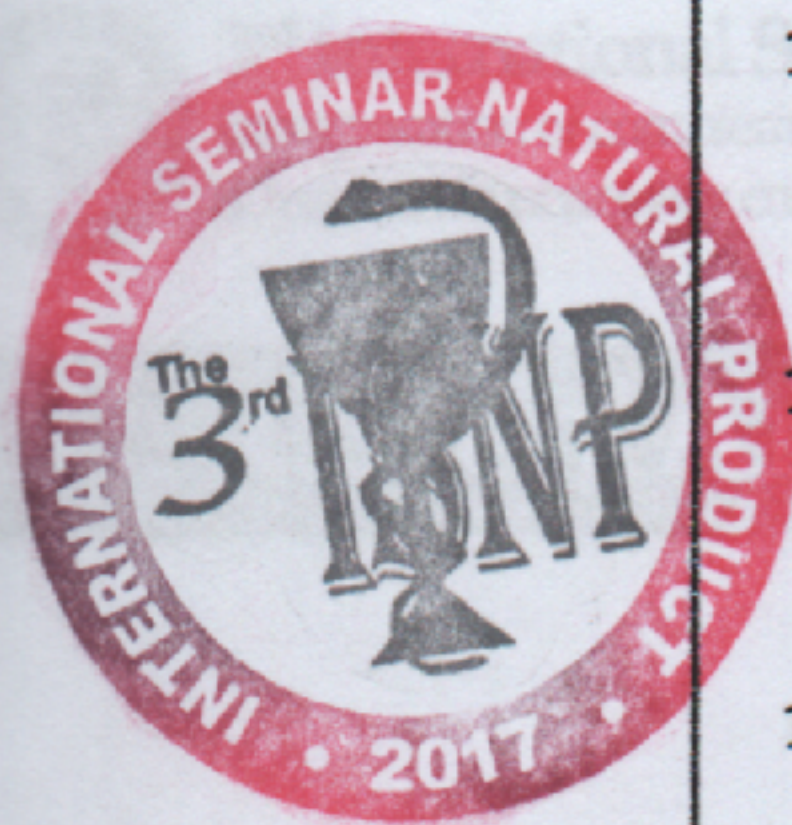
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Incorporation of complementary medicines and natural product education in pharmacy curriculum: Opportunities and challenges

Makassar, April 1st, 2017, Indonesia

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Research Article

Analysis Phenolic Compound and Antioxidant Activity of Ethyl Acetat Purification Extract Of Sawo Manila (*Manilkara zapota* L.) Leaf

Zainal Abidin, Andi Adelah, Marwa, Dwi Susilastuti, Risal

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ABSTRACT

Antioxidant utilization can reduce oxidation stress or as antioxidant substance in food product. Natural antioxidant is more safe than synthesis antioxidant because it is toxic and carsinogenic. The plant is source of natural antioxidant where it is related by content it's polyphenol compound. Antioxidant activity of extract ethanol of *Manilkara zapota* L. (chiku) (sawo manila) had been researched. The different of solvent and purification process displays the different of antioxidant activity. So the aim of this research are determination phenolic compound and antioxidant activity of ethyl acetat purification extract of *Manilkara zapota* L. (chiku) (sawo manila) leafs. This research had been done and acquired the yield value of ethyl acetat purification extract from extract ethanol *Manilkara zapota* L. (chiku) leafs is 2,524 %, its phenolic compound is 103,827 mg equivalen gallic acid/g extract , and IC₅₀ antioxidant activity is 124,516 ppm.

Keyword:

Antioxidant, Phenolic, Sawo Manila leaf, Purification extract

INTRODUCTION

Antioxidant utilization can reduce oxidation stress that relate to disease. Beside that antioxidant can be used as radical preventive if it is added to the food, so can postpone or obstruct of oxydation proses and increase life time with obstruct peroxidation proses of lipid. Currently, maker and user of antioxidant more interest to natural antioxidant, cause it's safety. While synthesis antioxidant such as butyl hydroxilanisol (BHA) and tetra butyl hydroquinone (TBHQ) have toxic and carsinogenic feature, where using TBHQ in Japan and Europe had been forbided (1,2).

Source of natural antioxidant can be obtained from a plant, may be from all of plant or one part of plant, such as fruit, seed, leaf, stem, bark , or root, but commonly, had be reported that leaf is the best choise to antioxidant test (3). Several researce had reported that content polyphenol compound of plants have the important role in antioxidant activity and many study Pharmacology and Biochemist had reported that polyphenol compound from a variety plants useful for health (1,2).

Manilkara zapota L. (chiku) is a plant from sapotaceae family. This plant had been used in natural therapy system to lots of disease. The different parts of this plant sucs as leaf, stem, and seed, had been much deeper researched about antimicrobe activity, where it's leaf had been determined have antioxidant activity (4). Some research had been done to determine antioxidant activity

of extract this plant, such as extract ethanol of leaf this plant given radical DPPH scavenging with IC₅₀ value is 68,27 µg/ml (5).

Beside that, had been researched about using the different solvent, where water extract, toluene extract, and aceton extract, given IC₅₀ value of radical DPPH scavenging activity, respectively are 160 µg/ml, 93 µg/ml, and 20 µg/ml. This fact exhibited that the different solvent showed the different antioxidant activity. It is caused by every solvent will extract the different content of fitochemist compound (3), and purification process of crude extract given the different fitochemist compound, where can be done by use liquid-liquid partition method or solid phase extraction (SPE) (6).

By virtue of, so we was interested to further develop the result of extract ethanol *Manilkara zapota* L. (chiku) research by using extract purified. This case was done caused consideration that quantity content of lipid or non polar compound in crude extract could be lose, so using this extract become more little with active compound many more. Result of this research was expected would produce extract purified ethyl acetat of *Manilkara zapota* L. (chiku) as natural antioxidant with better activity, so this research would be done to analysis phenolic content and antioxidant activity of ethyl acetat purification extract of *Manilkara zapota* L. (chiku).

MATERIALS AND METHOD

Sawo Manila Leaf (*Manilkara zapota* L. (chiku)), Folin-Ciocalteu's Reagent and Gallic acid was purchased from Merck, 1,1-Diphenyl-2-Picryl Hydrazyl (DPPH) was purchased from Sigma.

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Sample Preparation

This research used sawo manila leaf (*Manilkara zapota* L. (chiku)) as sample. It obtained from Sidrap regency, south Sulawesi, with simple random sampling method. This sample was prepared by way it were washed with tap water and dried, then were ground into fine powder.

Extraction Procedure

The sample powder (70 gram) was extracted by maceration method with ethanol at room temperature for 3 days. After that it were filtered and residue was re-extracted with equal volume of solvents. Supernatants were combined and evaporated to dryness, after that stored in refrigerator to further using

Purification Extract Procedure

Crude ethanol extract (2 gram) were soaked with 100 mL boiling water then cooled and stored in refrigerator for 12 hours. Extract were filtered and supernatants were liquid-liquid partitioned with ethyl acetate (3 x 100 mL). The ethyl acetate extracts were evaporated to dryness and then it was called purification extract (6,7).

Determination of Phenolic Compound

The concentration of phenolic was determination by using Folin reagent. Ethanol solution of purification extract in the concentration 400 ppm was used in the analysis. The reaction mixture was prepared by mixing 300 μ L of ethanol solution of purification extract, 1.2 mL of Folin-Ciocalteu's reagent in water (1 : 10) and 1.5 mL of 7% NaHCO_3 . The mixture samples were incubated at room temperature for 30 minutes. The absorbance was determined using spectrophotometer at $\lambda_{\text{max}} = 756$ nm. The samples were prepared in triplicate and the concentration of phenolic was expressed in terms of gallic acid equivalent (mg of GA/g pf extract) (8).

Determination of Antioxidant Activity

The purification extract solution were prepared the final concentration 120, 140, 160, and 180 ppm in methanol. It (1 mL each) were added in the mixture solution of 1 mL of 0.4 μ M DPPH and 1 mL of methanol. The mixture was shaken and left to stand at room temperature in the dark for 10 minutes. Absorbance was measured at 520 nm against a blank containing all reagents except the test sample (1). Vitamin C was used as the positive control. The percentage of inhibition of DPPH (1%).

RESULTS AND DISCUSSION

Ethanol extract sawo manila leaf had been researched given antioxidant activity, so this research use ethanol to obtain crude extract. The crude extract was obtained 3.529 gram from 70 gram dried sample leafs. From the crude extract was done purification extract process with use liquid-liquid partitioning method. This method is most used, simple, and cheap, but the result is not significant with solid phase extraction (SPE) method (6). Some solvent is most used to extract phenolic compound were ether, chloroform, acetone and ethyl acetate, where for this research was used ethyl acetate.

This extract was called purification extract cause when was done liquid-liquid partitioning process, occur separation between nonpolar and polar compound. To remove non polar from polar compound was used hot water, and to obtain phenolic compound from water, used ethyl acetate by way liquid-liquid partitioning. This research acquired the yield value of ethyl acetate purification extract was 2.524%.

Several research had notified that phenolic compound have important role to antioxidant activity, so this research was done to determine concentration of phenolic. It was done by using Folin reagent method, with its mechanism is reduction of Folin reagent by phenolic compound to blue compound. Absorbance result of reaction was measured by using spectrophotometer UV-Vis with max wavelength 756 nm (9). Calculation of concentration of phenolic compound can be see at the following Table 1.

Whereas for antioxidant activity of ethyl acetate purification extract was done by using scavenging 1,1-Diphenyl-2-Picryl Hydrazyl (DPPH) method. Its mechanism is donor proton a substance to DPPH radical compound become diphenylpicrylhydrazine non radical compound. This reaction is marked by alteration of purple colour of solution to yellow colour and its absorbance would be measured at max wavelength 520 nm. The ability of antioxidant activity of ethyl acetate purification extract was stated in IC_{50} (10). Determination of antioxidant activity of Vitamin C and ethyl acetate purification extract can be see in the following Table 2 and 3.

IC_{50} of Vitamin C was 9.618 ppm, shown that have the strong antioxidant activity, whereas IC_{50} of ethyl acetate purification extract was 124.516 ppm, shown that have the medium antioxidant activity. It is accord with parameter IC_{50} antioxidant activity by using DPPH, such as: very strong if < 50 ppm, strong if 51 - 100 ppm, medium if 101 - 150 ppm, low if 151 - 200 ppm, and very low if > 200 ppm. IC_{50} of ethyl acetate purification extract bigger than IC_{50} ethanol extract on the previous research by Islam M.R., et. al., it is caused by there were non phenolic compound have antioxidant activity in ethanol extract and did not soluble in ethyl acetate, beside that phenolic concentration in ethanol extract smaller than in ethyl acetate purification extract (5).

CONCLUSION

From this research, could be concluded that phenolic concentration of ethyl acetate purification extract was 103.827 mg gallic acid equivalent each gram extract and its antioxidant activity was 124.516 ppm.

ACKNOWLEDGMENTS

This research could be successful caused assistance from Directorate of Research and Community Service, the Directorate General of Strengthening Research and Development, and the Ministry of Research Technology and Higher Education, had given research funding pass through Research Student Creativity Program 2015.

Table 1. Calculation of phenolic concentration of ethyl acetat purification extract

Replication	Absorbance	Phenolic concentration (ppm)	Mean of Phenolic concentration (ppm)	Phenolic concentration of ethyl acetat purification extract
1	0,558	45,111	41,531	103,827 mg GAE/gram extract
2	0,498	39,556		
3	0,502	39,925		

Table 2. Determination of antioxidant activity of vitamin C

No.	Vitamin C concentration (ppm)	Absorbance	Absorbance blank (DPPH)	Inhibisi Percentage (%)	IC50 (ppm)
1	4	0,768	0,905	20,110	9,618
2	6	0,633		30,055	
3	8	0,525		40,989	
4	10	0,448		50,497	

Table 3. Determination of antioxidant activity of ethyl acetat purification extract

No.	Ethyl acetat purification extract (ppm)	Absorbance	Absorbance blank (DPPH)	Inhibisi Percentage (%)	IC50 (ppm)
1	120	0,472	0,905	47,845	124,516
2	140	0,396		56,243	
3	160	0,321		64,530	
4	180	0,293		70,939	

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