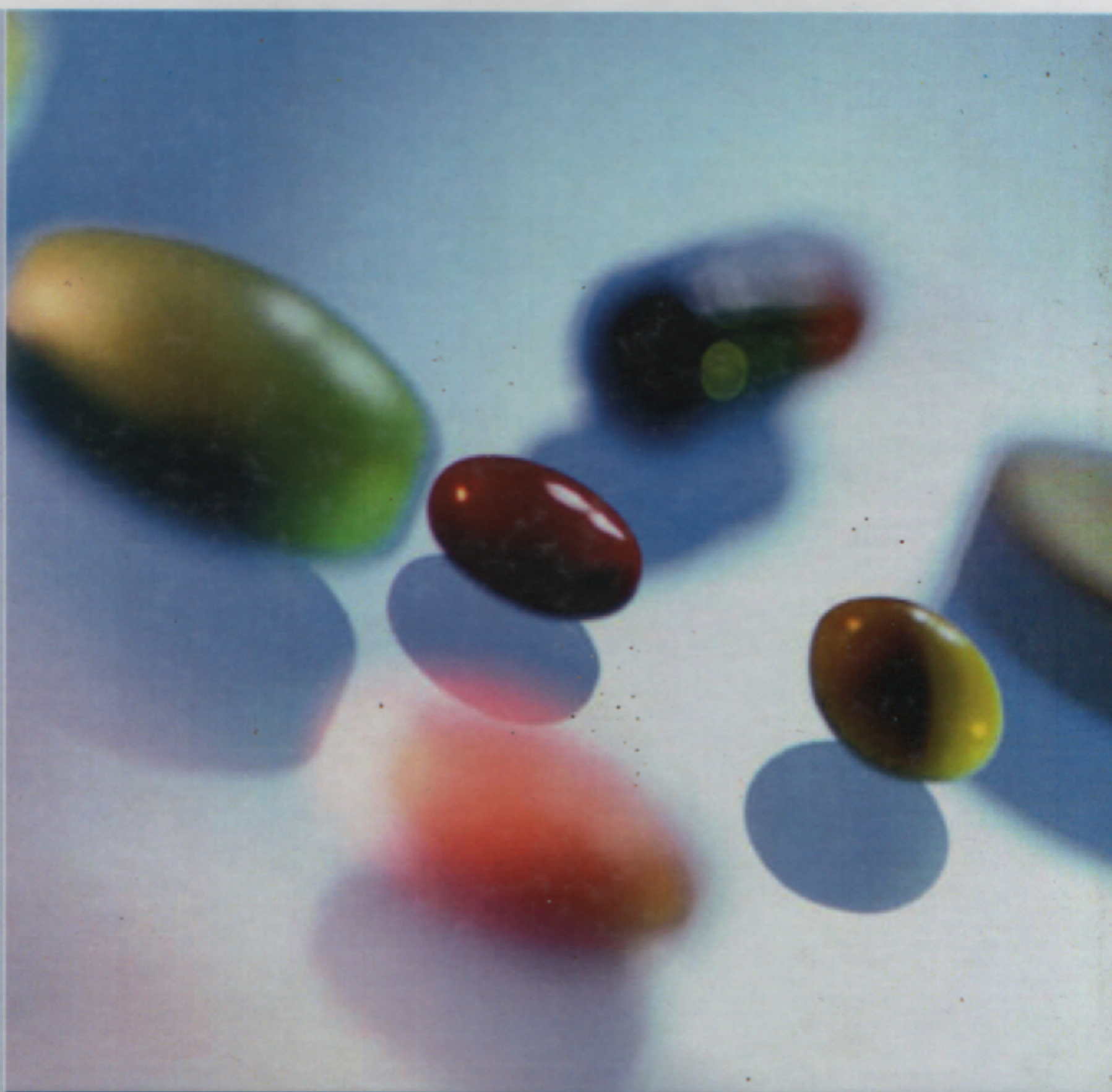




PROCEEDING

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



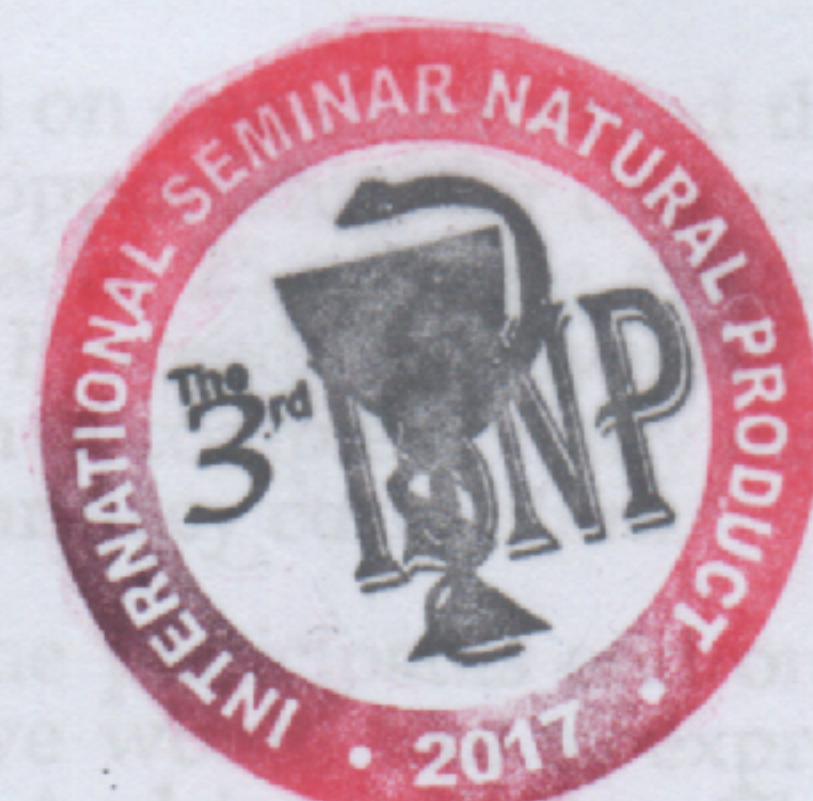


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Dalton Hotel Makassar
April 1st, 2017

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



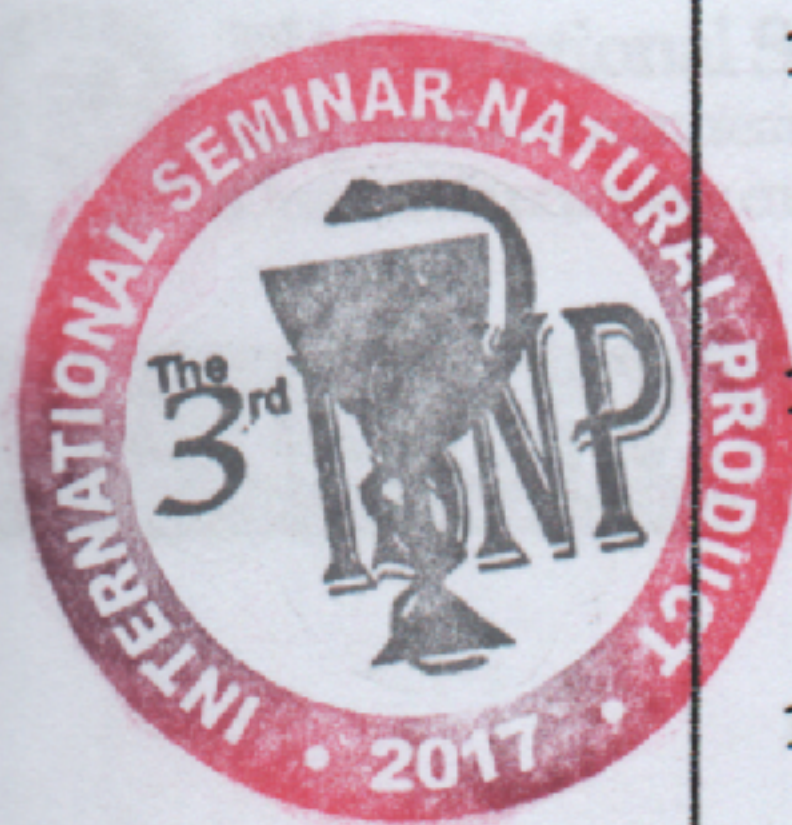
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Incorporation of complementary medicines and natural product education in pharmacy curriculum: Opportunities and challenges

Makassar, April 1st, 2017, Indonesia

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Research Article

Flavonoid Content Analysis of Ethyl Acetate Fraction of Neem Leaf (*Azadirachta indica* A. juss) by UV-Vis spectrophotometry

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ABSTRACT

Neem leaf is one of the parts of the plant containing secondary metabolites. It is unfamiliar to the public and is one of the plants used as the traditional medicine. This research aimed to determine the flavonoid content of ethyl acetate fraction of neem leaf (*Azadirachta indica* A. juss). The neem leaf was extracted by maceration method using ethanol, then partitioned by ethyl acetate where the determination of the flavonoid content by using UV-Vis spectrophotometry. The result showed that the flavonoid content of ethyl acetate fraction of neem leaf was 7,4520 mgQE/g fraction.

Keywords:

Neem leaf (*Azadirachta indica* A. juss), Flavonoid, UV-Vis Spectrophotometry

INTRODUCTION

Indonesian society is now widely use the plant as a traditional medicine to cope with various diseases. Research on traditional medicine is necessary to provide scientific evidence of the efficacy of a medicinal plant in addition can also be used as a source of guidance for the synthesis of compounds of new drug compounds. One plant that has long been used as a traditional remedy is neem (*Azadirachta indica* A. juss), whose other name is *Antelaea azadirachta* (Hyne, 1987). In Java, this plant is known as neem (Hyne, 1987). The title of this plant in the English language include neem, neem, margosa, Indian lilac, bead tree, pride of china, holy tree and Persian lilac (Gruenwald et al., 1998).

Plant neem (*Azadirachta indica* A. juss) including familia Meliaceae. Neem, especially in the seeds and leaves contain several components of the production of secondary metabolites were very helpful, both in agriculture (pesticides and fertilizers), and pharmaceuticals (drugs). Neem (*Azadirachta indica* A. juss) is one of the plants that can be used as an anti-diarrhea, fever, diabetes and have diverse chemical constituents include triterpenoids, steroids, alkaloids, flavonoids, glycosides (Asrhy, 2009). One class of chemistry that many serves as an active substance that can be used as a treatment is flavonoids. Flavonoids are compounds reducing good, inhibits many oxidation reactions, either the enzyme or non enzyme and works as an anti-inflammatory. Flavonoids act good container hydroxy and superoxide radicals thereby protecting the membrane lipids

against destructive reactions (Robinson, 1995). Quantitative analysis of flavonoids can be done by using UV-Vis spectrophotometry. Ultra-violet absorption spectra and absorption appears is the single most useful way to identify structures that flavonoids (Markham, 1988). Flavonoids contain aromatic conjugated system and can show strong absorption bands in the UV-Vis (Rohyami, 2007). Based on these descriptions it is necessary to do research on the levels of flavonoids in the leaves of neem (*Azadirachta indica* A. juss) with UV-Vis spectrophotometry method so that the potential of this plant as a raw material medicine for the prevention and treatment of various diseases can be developed to the maximum, and its use can be justified by society.

Materials and Methods

Materials used in this study is aluminum chloride 10% (p.a Merck), aquadest sterile, ethanol (p.a Merck), estrak leaves mimba (*azadirachta Indica* A. juss), ethyl acetate (p.a Merck), sodium acetate (p.a Merck), quercetin (p.a Sigma) and powder magnesium (p.a Merck). sample leaves mimba (*azadirachta Indica* A. juss) cleaned of dirt attached to the leaves using water flowing then dried. After a dry sample cut small, then ready to extracted with methods maceration. extraction leaves mimba (*azadirachta Indica* A. juss) simplisia leaves mimba (*azadirachta Indica* A. juss) weighed 300 grams, macerated using the solvent ethanol 96% at room temperature for 3x 24 hours and put in a container sealed and protected from sunlight occasional done stirring. Results maceration filtered by using the filter paper and evaporated with rotavapor. partition leaf extract mimba (*Azadirachta Indica* A. juss) extract viscous obtained then partitioned

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using the solvent ethyl acetate in a way partition liquid-liquid. taken extract as much as 0,5015 grams inserted into the water as much as 10ml, then the incorporated into the funnel separation and partition with ethyl acetate as much as 20 ML. then shaken, occasional cover funnel opened after that allowed to stand for 30 minutes to happen separation between layers of ethyl acetate (fraction of ethyl acetate) and a layer of water (residues). residue partitioned back in accordance with the way above and done as much as 3 times. fraction of ethyl acetate collected and evaporated to obtain the fraction of ethyl acetate thick (Tobo, 2001). 1. qualitative analysis of flavonoids testing flavonoids the sample mixed with 5 ML of ethanol, whipped, heated, and whipped longer

then filtered. then added mg 0,2 G and 3 drops HCl on each filtrat. the formation of Orange or Red at the layer of ethanol indicate flavonoids (Harbone, 1987). 2. The measurement of the levels of flavonoids of the fraction of ethyl acetate leaves mimba (*Azadirachta Indica A. juss*) 3 ML solution fraction of ethyl acetate leaves mimba, then added 0,1 ML $AlCl_3$ 10% and 0,1 ML sodium acetate. Then allowed to stand for 30 min at room temperature, and then measured absorbance with spectrophotometry UV-Vis the wavelength of absorption maximum 445 nm. done 3 times repetition and calculated levels of flavonoids obtained as mg equivalent quercetin/g fraction (Chang @ Inter alia., 2002).

RESULTS

Table 1. The results rendamen leaves Mimba (*Azadirachta Indica A. juss*)

Leaves Mimba	Weight of the end of sample (gram)	Weight of the beginning of sample (gram)	Rendamen (%)
Extract	12,5731	300 gram	4,1910%
Fraxtion	0,1063	0,5015 gram	21,1964%

Table 2. Measurement results fraction of ethyl acetate leaves mimba (*Azadirachta Indica A. juss*) using spectrophotometry UV VIS the wave length of 445 nm

Sample	Replication	Absorbance	Consentration of flavonoid early (mg/L)	The content of flavonoid (mgQE/g)	The average content of flavonoid
Fraxtion of ethyl acetate leaves mimba	I	0,506	7,2476	7,2447	7,5420 mgQE / g fraxtion
	II	0,515	7,3668	7,3638	
	III	0,544	7,7509	7,7477	

DISCUSSION

The plant mimba (*Azadirachta indica A. juss*) including Familia meliaceae. mimba, especially in the seeds and leaves contains some components of the production of metabolites secondary a very rewarding, both in the field of agriculture (pesticides and fertilizer), and pharmacy (medicine). mimba (*Azadirachta Indica A. juss*) is one of the plant that can be used as anti diarrhea, fever, diabetes and has the content of chemical varied among others triterpenoid, steroids, alkaloids, flavonoids, and glycosides (asrhy, 2009). in this study, used sample leaves mimba (*Azadirachta Indica A. juss*). To get a chemical desired used extraction method which is dilution substances efficacious or active substance of the plant parts by using a suitable solvent (ditjen pom, 1986), where the extraction process used is maceration because of this method is a simple method, cheap and easy. sample leaves mimba (*Azadirachta Indica A. juss*) that has dried 300 G dissolved in solvent ethanol 96% 1 L. solvent used in maceration is ethanol 96%, which aims to draw all chemical components in the leaves mimba (*Azadirachta Indica A. juss*), as solvent ethanol 96% is a solvent Universal that can be interesting compounds soluble solvent non-polar to polar. The extract viscous obtained then partitioned using the solvent ethyl acetate in a way partition liquid-liquid to get a fraction of ethyl

acetate. The method partition liquid-liquid is a method of separation of compounds by using 2 solvent different or not mutually mixed. the solvent used the water and ethyl acetate. The results rendamen on the extraction of 4,1910% and to rendamen fraction of ethyl acetate for 21,1964%. Test qualitative flavonoids to view the content of flavonoids that can be detected by using the powder mg added a few drops of HCl, the formation of Orange or Red at the layer of ethanol indicate flavonoids (Harbone, 1987). The identification of shows the fraction of ethyl acetate leaves mimba positive flavonoids. On quantitative analysis of flavonoids done using spectrophotometry UV-Vis to measuring how big the content of flavonoids contained in the fraction of ethyl acetate leaves mimba, where flavonoids containing system aromatic that conjugated and can be shown the ribbon uptake strong in the area UV-vis. on testing spectrophotometry UV-vis used solution standard quercetin, the first performed running of the wavelength of 400-500 nm. results running shows the wavelength of maximum standards quercetin are at a wavelength of 445 nm. solution standard quercetin made in some series concentration of the 2 ppm, 4 ppm, 6 ppm, 8 ppm, 10 ppm and 12 ppm. circuits series the concentration, each 3 ML then added 0,1 ML aluminum chloride 10% working to give effect bathochrom, so the reaction color formed can be observed and can be measured on spectrophotometry

visible. Then added 0,1 ML sodium acetate 1 M, which serves as stabilizer, so that the effect of batochrom had happened can be maintained. Then incubated for 30 minutes with the aim of order reaction between the solution standard quercetin and reagents can take place perfectly, measured each series the concentration in the wavelength of 445 nm. results absorbance of a series of concentration recorded then generated curve calibration linear quercetin that $Y = 0.0755 X - 0.0412$ with the value of the coefficient of determination (r^2) obtained by 0,9926. so is also on measurement absorbance sample fraction of ethyl acetate leaves mimba made in three replication. The weighed 5 mg fraction of ethyl acetate leaves mimba then dissolved in 10 ml methanol (solution stock). Took 3 ML, then added 0,1 ML aluminum chloride 10%, and 0,1 ML of potassium acetate. incubated for 30 minutes, then measured in the wavelength of a maximum of 445 nm and earned value absorbance on sample fraction of ethyl acetate leaves mimba. from the results of this study the content of flavonoids fraction of ethyl acetate leaves mimba is 7,5420 mg/g, which means each weight fraction of ethyl acetate leaves mimba contained 7,5420 mg/g flavonoids equivalent to quercetin.

CONCLUSION

Based on the research conducted can be concluded that the levels of flavonoids of the fraction of ethyl acetate leaves mimba is 7,5420 mg/g fraction.

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