

DOI:

10.22301/IJHMCR.2528-3189.142

Article can be accessed online on:
<http://www.ijhmcr.com>

ORIGINAL ARTICLE

**INTERNATIONAL JOURNAL
OF HEALTH MEDICINE AND
CURRENT RESEARCH**

IDENTIFICATION OF OCTADECADIENOIC COMPOUND CONTAINED IN GEDI EXTRACT (*Abelmoschus Manihot L Medik*)

**Bernard T. Fambrene¹, Arend L. Mapanawang², Greta. E. Kaerasa³,
Averous F. Budiadji⁴, Helti Candra Petrus⁵**

¹ STIKES Halmahera

² Yayasan Medika Mandiri Halmahera

ARTICLE INFO

Article History:

Received 22th September, 2016

Received in revised form

12th October, 2016

Accepted 22th November, 2016

Published online 30th December,
2016

Key words:

Octadecadienoic Acid.

***Correspondence to Author:**

Bernard T. Fambrene

STIKES Halmahera, Yayasan
Medika Mandiri Halmahera

E-mail:

bernard.fambrene@yahoo.com

ABSTRACT

Products of herbal medicine were potential to be developed, considering that the medicine need in Indonesia was estimated would be increased. Nowadays, compounds used by the medicines in the developed countries, directly downed from the compounds contained in plants or it's synthetic. Gedi (*Abelmoschus manihot L. medic*) is plant that traditionally well known in North Maluku, especially North Halmahera as vegetable plant. Indonesian society, mostly, haven't known or aware that any kinds of vegetable have special quality as medicine because it contained certain compound.

Research Objective: to identify *Octadecadienoic acid* contained in extract of gedi leaf (*Abelmoschus manihot L medik*) by using Gc-Ms method. This is experiment research.

Research Result: Sample taken from fresh fruit picked directly, then made into powder by soaking with methanol. Later, it evaporated until becoming thick extract of methanol. After that, it tested by using Gc-Ms tool. Sample taken from

Conclusion: Has From the test result of Gc-Ms tool, it concluded that Gedi leaf (*Abelmoschus manihot L. medik*) contained *Octadecadienoic acid* (Asam stearat) with content of (1,13%).

Copyright © 2016, Bernard T. Fambrene. This is an open access article distributed under the creative commons attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Citation: Bernard T. Fambrene¹, Arend L. Mapanawang², Greta. E. Kaerasa³, 2016 "Identification Of Octadecadienoic Compound Contained In Gedi Extract (*Abelmoschus Manihot L Medik*)", *International Journal of Health Medicine and Current Research*, 1, (02), 142-146.

INTRODUCTION

The need of medicine in Indonesia estimated would be increased rapidly. Based on the analysis result of Health Department, the growth of pharmacy industries developed between 10-14% per year (Permenkes Number 87 Year 2013). This would encourage the need of stock sources of medicine both chemical and natural. Based on the data from POM Corporation Republic of Indonesia, number of herbal medicine registered until 2015 were 8.921 products (BPOM 2015).

This showed that herbal products were potential to be developed continuously. One cause of the increasing of using herbal medicine was the lower risk, moreover WHO had recommended the using of medicine plants extract as herbal medicine because it was easy to get and cheap (Hayati & Marlinda, 2003).

Gedi (*Abelmoschus manihot L. Medik*) was tropical plant of Malvaceae family, had been traditionally known in North Maluku especially North Halmahera as vegetable plant. Indonesian society, mostly, haven't known or aware that any kinds of vegetable have special quality as medicine because it contained certain compound. This chemical compound has pharmacology effect to help the healing of any diseases. Nowadays, compounds used by the medicines in the developed countries, directly downed from the compounds contained in plants or it's synthetic.

Bioactivity selection (*screening*) process was a method that mostly used by big industries in finding bioactive compound in the nature. This way was more effective if the screening of plants combined with plants' criteria which had been traditionally used as medicine. Societies used gedi leaf that boiled without salt as traditional medicine, such as for kidney, stomach, and high cholesterol. Theoretical review showed that fitochemical review of gedi plant as traditional medicine in North Sulawesi hadn't been reported yet previously.

Degenerative diseases caused by free radical effect were increasing. Therefore, it was very important to get potential antioxidant compounds. Polifenol and flavonoid inside the plants considered prospective as antioxidant sources. Such as the research done by Mamahit L. (2009), that inside the isolation result of gedi extract (*Abelmochus manihot L*) there was Eikodekana compound. According to research of Mercy Taroreh (2015), fenolik compound in gedi leaf was polar so that produced the highest

antioxidant activity and it was supported by the research which stated that gedi extract contained plifenol and Flavonoid.

Based on research done by (Mapanawang, Sambode, & Killing, 2016), by identifying steron from gedi leaf (*Abelmoschus manihot L. medic*), it found the result that gedi leaf (*Abelmoschus manihot L. medic*) containing Octadecanoic acid (31,64%). Based on the research of Bawa (2011), by the antioxidant and anti fungi activities of white atsiri compound of white frangipani flower (*Michelia alba*), found that atsiri of frangipani flower (*Michelia alba*) containing *Octadecadienoic acid* (38,87%).

METHODS

This was experiment research conducted in Integrated Laboratory of Pharmacy Department of Sekolah Tinggi Ilmu Kesehatan Halmahera.

Sample of this research was fresh Gedi Plant (*Abelmoschus ManihotL.medik*) taken from West Halmahera, Ibu Utara Sub district, Tengowango Vilage.

TOOLS AND MATERIALS RESEARCH

a. TOOLS

1. Oven
2. Spatula
3. Chemical Glass
4. Bunsen
5. Erlenmeyer
6. Rotavavor
7. GC-MS tool
8. Measurement Glass
9. Aluminum foil
10. Three port

b. MATERIALS

1. Gedi Extract (*Abelmoschus manihot L medik*)
2. Methanol
3. Methylated Spirit

PROCEDURES

a. Making of Gedi Extract (*Abelmoschus manihot L. Medik*)

The leaf taken in the morning, those were the green leaf from the fifth of peak until downward, picked directly with hands. The leafs collected from Tengowango village were wet sorted or washed with flowing water, then dried. Then the dry leaf were dry sorted and later powdered

Gedi leaf were extracted by using maserasi and infudasi methods. Firstly, 800 gr of gedi leaf powder

processed with maserasi in methanol during 3 X 24 hours in different glass containers until 1-3 cm above the powder. The filtrate were gathered then evaporated with retavavor until getting thick extract of methanol.

b. The Process of Identification of Octadecadienoic acid by using GCMS

Thick extract of methanol were fractioned in the chemical glass, then processed by using GC tool which functioned to test the purity of certain material, or separated any components from the mixture and was able to help in identifying complex compound. Next, it followed by using MS tool that functioned to change a sample of compound into positive and negative ions and it produced from any plants.

PLOT OF MAKING GEDI LEAF EXTRACT (*Abelmoschus manihot L. medic*)

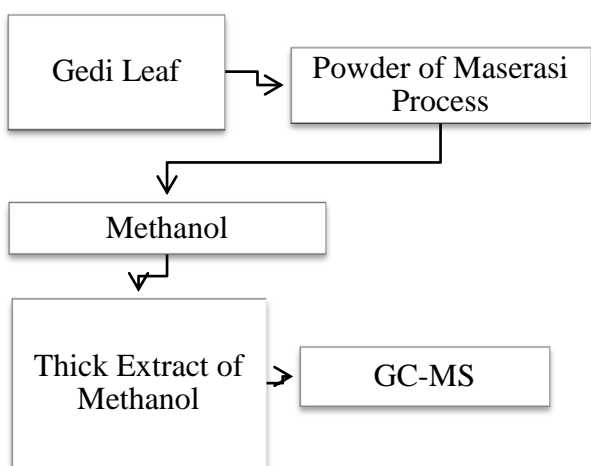


Figure 1. Scheme of making Gedi Leaf Extract

RESULTS

This research conducted in West Halmahera Regency, Ibu Utara Sub district, Tengowango Village in May until June 2016 in order to take basic material od sample of gedi leaf (*Abelmoschus manihot L. medik*). Sample of gedi leaf taken in the morning at 7 am. After being taken, the gedi leaf (*Abelmoschus manihot L. medik*) washed and cleaned in the flowing water. After that, it dried under the sun at 8-11 am during 3 days. After getting dry, it grinded by using mortar until became soft powder. Then, the soft powder of gedi leaf (*Abelmoschus manihot L. medik*) processed with maserasi or soaked by using methanol during 3 X 24 hours. After 3 days, it was filtered and taken the methanol of gedi leaf (*Abelmoschus manihot L. medik*) and evaporated for 3 hours. Later, after getting the thick extract of methanol, followed with testing the active

substance by using Gc-Ms (Gass Cromotografi Mass Spectrometri).

Sample extract was given pressure with helium or nitrogen, so before being injected into column (Gc), it already became vapor form. Then the sample in the vapor form injected into column. From the column to detector (Ms), there occurred of a separation became fragment.

The fragments produced would indicate fragment compound and it's result checked with the available result in Gc-Ms. The tool would show some compounds appeared. After that, what should be done was finding the compound which the most appear with percentage of >80%.

Table 1. Gc-Ms Test of Gedi Plant (*Abelmoschus manihot L. medik*)

Kind of Sample	Compound	Content %
Gedi Leaf	Estra-1,3,5(10)-TRIEN-17-onc,3,15-bis(trimethylsilyl)oxyl-(15alpha)	3,48
	1,3,3,3-tetrachloro-1-bromo-2,2-difluoropropane (-) isolongifolol methyl ester	1,97
Gedi Leaf	Cyclohexene,4-(4-ethylelohexyl)-1-pentyl-2,6,10-Trimethyl,14-Ethylene-14-pentadecane	1,13
	Hexadecanoic Acid	12,26
Gedi Leaf	11-Heradecanoic acid	2,97
	(2E)-3,7,11,15-Tetramethyi-2-Hexadecen-1-Ol 9;12-	4,96
Gedi Leaf	Octadecadicnoic acid,ethyl ester	1,13
	1-Cyelododecyne	1,23

Kind of Sample	Compound	Content %
	(9E,12E)-9,12-octadecadienoic acid	31,64
Gedi Leaf	2-1(hydroxy methyl)ethyl palmitate	4,57
	Oleic acid	3,95
Gedi Leaf	Z,Z-10,12-Hexadecadien-1-ol acctat	4,58
	(6E,10E,14E,18E)-2,6,10,15,19,23-haxamethyl-2,6,10,14,18,22-tetracosahexaene	3,20
	2-hydroxy-1-(hidroxymethyl)ethyl(9z,12z)-9-12-octadecadienoate (24 zeta.)-24-methyl-24-homocholestanol	4,95
	28,33-dinorgorgoxdcz sta-5,7-dien-3-ol.(3 beta,22R)	1,35
		3,66

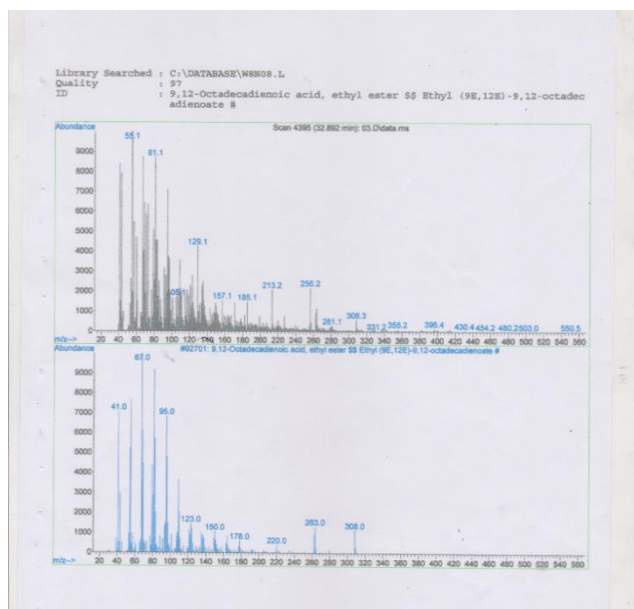


Figure 2. Result of GCMS Octadecadienoic acid, Ethyl Ester (content of 1,13%)

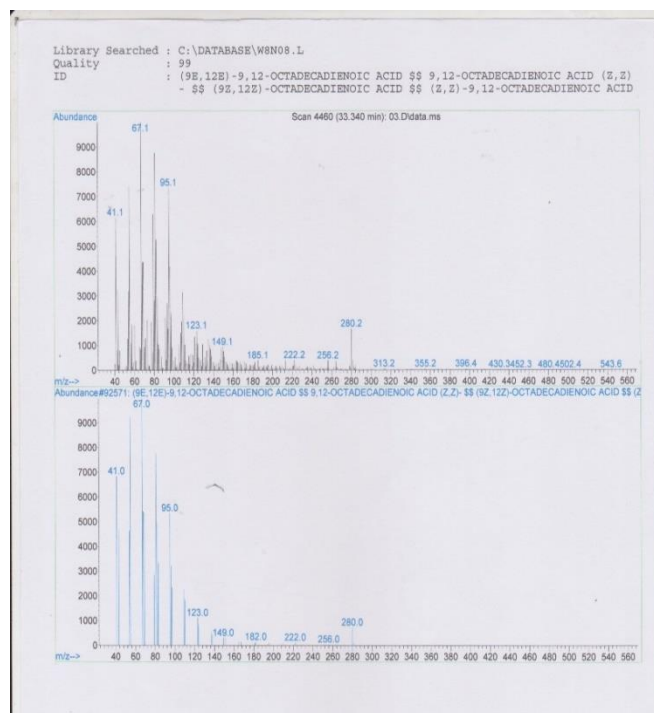


Figure 3. Result of GCMS Octadecadienoic acid (content of 31,64%)

DISCUSSION

Gedi plant (*Abelmoschus manihot*(L.) Medik) was kind of plant that very common used by the societies. Part of gedi which used were it's leaf, flower, and root. Gedi grows in Tropical Asia and North Queensland, and also well grows in tropical and sub tropical area. Although this plant is kind of perennial, but it can be planted as annual plants in temperate area, well flowered in the first year and produces seeds. The main stem can reach 2 meters and has short branches. Gedi is hard plant and prefers sun with fertile land, humid, and well drainage. It's flower is big (reaches the diameter of 15 cm) and has color of lemonade yellow with purple inside.

Compound is composited of some elements formed from some chemical reactions of compounds that had different characteristic with it's composers. For example, 2 hydrogen atoms and 1 oxygen atom could be gathered into water molecule (H₂O).

Gedi leaf (*Abelmoschus manihot L. medic*) contained *Octadecadienoic acid* (Asam stearat) that functioned as anti fungi. Then, based on the research of white atsiri compound of white frangipani flower (*Michelia alba*), found that atsiri of frangipani flower (*Michelia alba*) containing *Octadecadienoic acid* (38,87%).

CONCLUSIONS

Based on the result research by using Gc-Ms method, it concluded that Gedi (*Abelmohscusmanihot L. medic*) contained *Octadecadienoic Acid* (Stearat Acid) that meant as solid fat functioned as anti fungi.

ACKNOWLEDGEMENTS

Government of North Government of North Halmahera Regency, Medika Mandiri halmahera Foundation, Lipi's Botani Laboratory of West Java, Laboratoty of DKI Jakarta, Pharmacy Laboratory of Stikes Halmahera North Maluku.

REFERENCES

1. Hayati, & Marlinda. *Terampil membuat ekstrak temu-temuan*. Yogyakarta: Adicita Karya Nusa; 2003.
2. Nurliani, A. Penelusuran potensi Antifertilitas kulit kayu durian (*Durio zibethinus Murr*) melalui skrining Fitokimia *jurnal sains dan terapan kimia*.2007;1(2): 53-58.
3. Howe, L., & D.H, W. *Mass spectrometry principle and aplication*. London: mc groww hill; 2010.
4. Jain, & Bari. Aktifitas anti-inflamasi dari ekstrak patroleom ether dan ekstrak metanol dari batang Gedi (*Abelmoschus manihot L medik*). 2010.
5. Rusmiati. *Pengaruh ekstrak metanol kulit kayu durian (*duria zibethinus murr*) pada struktur mikroanatomi ovarium dan uteres mencit (*muss muschulus*) betina: sauns dan terapan kimia* 2010;4 (1).
6. Tashalifah, M. *Efek pemberian ekstrak daun gedi (*Abelmoschus manihot L Medic*)*. Bogor: IPB Press; 2010.
7. Bawa, I. G. a. g. Aktifitas Antioxidant dan antijamur bunga cempaka putih (*Michelia alba*). *jurnal kimia*. 2011.
8. Amri, A. f. *Pengaruh pemberian ekstrak daun Gedi (*Abelmoschus manihot L Medik*) terhadap kadar Glukosa darah tikus putih Galur wistar (*Rattus norvegicus L*)*.Yogyakarta: pendidikan Biologi FMIPA UNY; 2012.
9. RI, D. k. (Ed.). *Materi Medika Indonesia*.Jakarta: Depkes; 2015.
10. Mapanawang, A. L. *Riset dibidang kesehatan*. Tobelo: Yayasan Medika Mandiri Halmahera; 2016.
11. Mapanawang A. l., Sambode, F., & Killing, M. e. a. Identification And Analisis Of Entrone In Gedileaves (*Abelmoschus Manihot Jatropa Multifida Eurphorbiaceae*) Of Mature Pregnant. *International Journal of Current Research*.2016; 8(5): 31502-31504.
