

DOI:
10.22301/IJHMCR.2528-3189.1071

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

ORIGINAL ARTICLE

INTERNATIONAL JOURNAL
OF HEALTH MEDICINE AND
CURRENT RESEARCH

IDENTIFICATION METHOXYEUGENOL COMPOUNDS IN FRUIT EXTRACT METHANOL GOLOBE MARBLES (*Etilingera alba* (Blume) A.D. Poulsen)

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ARTICLE INFO

Article History:

Received 8th Sep, 2018
Received in revised form
10th Oct, 2018
Accepted 20th Nov, 2018
Published online 31th December,
2018

Key words:

Golobe Marbles (*Etilingera alba*
(Blume) AD Poulsen), GC-MS,
Compound Methoxyeugenol.

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ABSTRACT

Golobe Marbles (*Etilingera alba* (Blume) AD Poulsen) is one kind of plant in Halmahera has health benefits, which are used as drugs to treat cancer, wounds and bacterial infections. This plant grows in tropical regions including Halmahera. This study aims to identify compounds methoxyeugenol contained in the methanol extract of the fruit goobe marbles (*Etilingera alba* (Blume) AD Poulsen). This research is an experimental research conducted in the laboratory pure pharmaceutical STIKES Halmahera. Mechanical separation is macerated using methanol as penyari liquid and gas chromatography-mass spectrometry is used to identify the compounds methoxyeugenol contained in the methanol extract of the fruit golobe marbles. The results showed that the fruit contains compounds golobe marbles.

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Citation: Lidya Gagiwu^{1,2*}, Douglas N. Pareta^{1,2*}, Jandris Bandari², Averous Budiadji^{1,2}, 2018 "Identification Methoxyeugenol Compounds In Fruit Extract Methanol Golobe Marbles (*Etilingera Alba* (Blume) A.D. Poulsen)", International Journal of Health Medicine and Current Research, 3, (04), 1071-1075.

INTRODUCTION

Indonesia is a country with abundant natural resources, almost any kind of plant can grow in this country. Most have already been used by our ancestors to treat various diseases (Rahmawan, SL, 2008). Indonesian tropical forest region has the second highest biodiversity in the world after Brazil. Indonesia is known more than 20,000 types of medicinal herbs. But only 1,000 species are already in the data, while only about 300 species that have been in use for

traditional medicine (Arief, TQ 2008).

With the growing ilmu technology and knowledge, it is possible in the world of medicine also experienced various changes and progress. Traditional medicine were all regarded as outdated treatments now starting ogled and conducted research on the content of natural fruits (Mapanawang, AL 2016). Knowledge of traditional medicine and the use of medicinal plants is an important proposal to improve the ability of individuals and families to obtain a healthy life. Traditional health care is a great potential for being close to the people, easily available and relatively cheaper than modern medicine (Zulkifli, 2004).

Genus *Etilingerais* one of the largest in Zingiberaceae, which is referred to as the ginger family, which includes more than 1,200 species, most notably the common spice ginger (*Zingiber officinale*) (Poulsen AD 2006). Zingiberaceae is a family of herbaceous plants and scented merimpang found in tropical regions of Asia and consists of 50 genus includes 1,300 species of plants. Most types of family Zingiberaceae found as terrestrial plants in the lowlands, but some are found in

the mountains and live as epiphytes (Suhono, B. and Tim LIPI, 2010).

There are 4 types of types Golobe North Maluku and Maluku, including: Golobe milk Halmahera (*Hornstedtia Alliaceae*), Golobe Halmahera or Golobe Ambon (*Zingiberaceae Alliaceae*), rambutan Golobe Halmahera (*Amomum sp.*), And ginger Golobe Ambon or marbles Golobe Halmahera (*Etilingera alba* (Blume) AD Poulsen) (Mapanawang, AL et al, 2018).

METHODS

Types of research

This type of research used in this research is a kind of experimental research sample was Golobe Marbles premises.

Time and Place of Research

At the start of the month of May 2018 to July 2018. The research was conducted in the laboratory of Pharmaceutical Studies College of Health Sciences Halmahera.

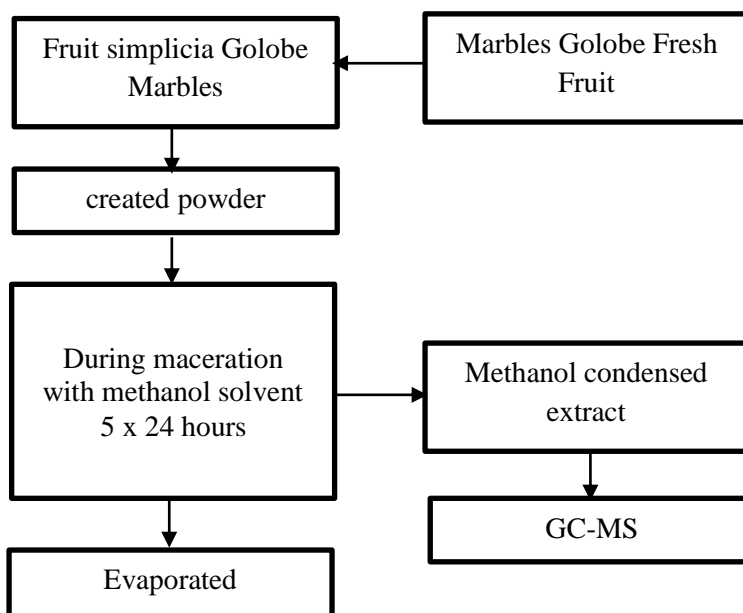


Figure 1. The schema of Making The stem golobe extract (*Etilingera Alba (blume)* A.D Poulsen).

Tools and materials

Tool

- 1) Analytical scales
- 2) Water bath
- 3) blender
- 4) Toples
- 5) mortar
- 6) Sieves / mess
- 7) rod stirrer
- 8) Filter paper

- 9) aluminum foil
- 10) Scissor
- 11) Erlenmeyer
- 12) glassware Beaker
- 13) Measuring cup
- 14) Drop pipette
- 15) GC-MS instrument

Material

- 1) Fruit Golobe marbles taken from the village of West Tobelo Kusuri subdistrict.
- 2) Methanol solvent.

Work procedures

Flow Making Fruit Extract Golobe Marbles (Etlingera alba (Blume) AD Poulsen)

Fruit Golobe Marbles (*Etlingera alba* (Blume) AD Poulsen) was taken from the village Kusuri Tobelo Western District of North Halmahera district. Marbles Golobe fruit is taken fresh and ripe, are picked directly by hand. Opened rind Golobe, then cleaned or washed with water, dried in the sun at 07:00 to 10:00 am, after which the sample was weighed to determine the weight of dried, then crushed using a mortar to become a coarse powder followed by smoothing using a blender, powder obtained in the sifter with a corresponding mesh sieve, then weighed again and then put into containers and given a label.

A sample of 100 grams (fine powder golobe marbles) macerated with methanol for 5 x 24 hours (5 days). The initial step, enter the marbles Golobe fruit that has been refined into a vessel maceration then pour methanol, then closed vessel maceration and let stand for 5 days in a place protected from light sauce is stirred using a stir bar, after 5 days then do the filtering, separate the filtrate and the residue, macerated back sambal stirred for 2 days, after 2 days and then do the filtering the filtrate is taken and the residue discarded. Further evaporated with a water bath to obtain a thick extract Golobe marbles.

How it works Identify Compounds that are Methoxyeugenol in Methanol Extracts Fruit Golobe Marbles (*Etlingera alba* (Blume) AD Poulsen) with GC-MS Method

The working principle of the GC-MS is a sample of the liquid is injected into the injector then evaporated. The vaporous samples taken by the carrier gas to the column for the separation process. Once separated, each component will be through ionizing chamber and bombardment by electrons, causing ionization. Ion fragments produced will be captured by the detector and the resulting mass spectrum.

Condensed methanol extracts were fractionated in a beaker, then evaporated by using a GC instrument that serves to test the purity of a particular substance, or separating the various components of the mixture and can assist in identifying compounds that complex. Then proceed using the MS tool that functions convert a sample compound into positive ions and negative ions generated from plant sources (Budiadji AF, et al, 2016).

RESULTS

Sampling Fruit Golobe Marbles (*Etlingera alba* (Blume) AD Poulsen)

Fruit golobe marbles taken in the village Kusuri Western District of North Halmahera Tobelo on July 2, 2018 at 12:30 CET. Fruit golobe marbles are picked later been taken fresh fruit and cooked and then peeled skin of the fruit to obtain the fruit / seed golobe. After it is washed with water to clean and weigh the wet weight megetahui golobe fruit samples marbles. Having weighed obtained wet weight of 500 grams, then put it in the appropriate container, then dried in the sun at 07:00-10:00 am until the samples are completely dry. Then weighed again and obtained a dry weight of 200 grams.

Preparation of Methanol Extracts Fruit Golobe Marbles (*Etlingera alba* (Blume) AD Poulsen)

The dry weight of 200 gram sample crushed using a mortar and then crushed again with a blender to obtain a fine powder. Once in a blender, sieved by using a sieve sample was then weighed and fine powders obtained 100 grams, after it was dissolved in methanol at a ratio of 1:10 (1 gram sample in 100 ml of methanol), for 5 days and then filtered golobe fruit methanol extract, filtrate taken and the residue discarded. Then macerated back (remaserasi) for 2 days. After it is evaporated using a water bath until thick fruit extract obtained golobe marbles (8.6 grams).

Compound Analysis Tool Methoxyeugenol on GC-MS

Table 1. Sample Test Results Golobe Fruit Marbles (*Etlingera alba*) with GC-MS Tools.

Sample Type	Compound	Contents
Fruit Golobe Marbles	2,4 pentanediol	1.39%
	Caryophyllene	1.39%
	Methoxyeugenol	15.32%
	2-pentanone-(2,4,6 trihydroxyphenyl)	6.22%
	Hexadecanoic acid, ethyl ester	4.02%
	hexadecanoic acid	22.45%
	Ethyl 9 octadecanoate	1.18%
	2,4-dimethyl-6-phenylpyridine	1.38%

Sample Type	Compound	Contents
	2,4-dimethyl-6-phenylpyridine	1.39%
	Hexadecanoic acid ethyl ester	1.61%
	9,12 octadecanoic acid (ZZ) -	21.77%
	Heptadecane	3.02%
	9-tricosane, (Z) -	1.50%
	Heptadecane	1.32%
	Henicosyformate	1.91%
	Cyclotetracosane	3.76%
	Gamma-sitosterol	5.20%
	Stigmast-4-en-3-one	1.68%

DISCUSSION

In the study of marbles globe fruit methanol extract using GC-MS proved that the compounds contained in fruit globe methoxyeugenol marbles (*Etilingera alba*), Based on the test results of samples of fruit extracts globe marbles in the table above that methoxyeugenol compound analysis on the sample test by means of GC-MS is at a concentration of 15, 32%, while the highest concentration which is hexadecanoic acid compound that is 22.45%. And the lowest is 9-octadecanoate ethyl compound is 1.18%.

In this study, the results of analysis of compound *methoxyeugenol* characterized by the presence of peaks in the chromatogram and mass spectrum based on the results of the detector. Chromatogram provides information on the number of chemical components contained in the mixture being analyzed (if the mixture shaped sample) indicated by the number of peaks formed on the following chromatogram quantity respectively. Mass spectrum provides information on the results of the analysis of mass spectroscopy system is a description of the types and number of chemical molecules formed from a chemical component (respective peaks in the chromatogram).

Methoxyeugenol compound is a volatile compound, for which there are essential oils and other oil content. Methoxyeugenol compounds are also found in the leaves of clove, nutmeg leaf, betel leaves and others, and acts as an antibacterial, antioxidant, antiviral, and anti-cancer. The compound methoxyeugenol compound has a distinctive aroma of mint because it contains a bit of menthol compound. Methoxyeugenol

compound is a derivative of the compound eugenol which has the molecular formula C₁₀H₁₂O₂, but at methoxyeugenol compound contained methoxy groups.

CONCLUSION

Based on the analysis of samples of fruit globe marbles (*Etilingera alba* (Blume) AD Poulsen) it can be concluded that the analysis results of GC-MS instruments are some of the content of chemical compounds in the fruit globe marbles with each of the different concentrations. Compounds identified in this study is methoxyeugenol compounds in fruit samples globe owned marbles with a concentration of 15.32%.

SUGGESTION

Based on the benefits of research, that the importance of knowing about efficacious medicinal plants to cure diseases. Therefore, it is expected their further studies on fruit globe marbles as a medicinal plant in Halmahera.

If there are errors in the writing of this scientific writing, the author memerima criticism and suggestions from readers to improve the way the writing is good and right.

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