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IDENTIFICATION OF SQUALEN COMPOUNDS CONTAINED IN METHANOL EXTRACT OF PANGI LEAVES (*Pangium edule Reinw*)

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ABSTRACT

Background: One of the interesting plants to study as medicine is pandanus fruit. (One of the causes of the increasing use of traditional medicine is the low risk it causes, traditional medicine including herbal medicine has been used for generations by every country in the world. traditional research should be used rationally and based on evidence. Research Objectives: The aim of this study was to identify the Squalene compounds contained in the methanol extract of Pangi Leaves (*Pangium edule R*) .

Type of Research: Types of Experimental Research with a Laboratory Scale Aim to Identify Squalen Compounds .. Conclusion: Based on the results of the analysis of the pangi leaf sample (*Pangium edule R*), it can be concluded that the results of the analysis on the GC-MS tool contained several chemical compounds contained in pangi leaves with different concentrations. The compounds identified in this study were compounds. wa squalen in the pangi leaf sample with the concentration that was owned was 21.22%.

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INTRODUCTION

The World Health Organization (WHO) recommends the use of traditional medicine for the prevention and treatment of chronic, degenerative and cancer diseases. One of the causes of the increasing use of traditional medicine is the low risk it poses. Traditional medicine, including herbal medicine, has been used for generations by every country in the world. However, treatment using traditional medicine must be used rationally and based on evidence.¹

Indonesia is a country with the fourth largest area of tropical rainforest in the world after Brazil, Congo and Peru, and is located on the equator with a tropical climate which has a rainy season and a dry season. So that the Pangli plant (*Pangium edule* R) grows clay or is maintained on the edge of a river or teak forest, often found growing in dry, inundated areas, rocky soil or clay. 1Pangli plant (*Pangium edule* R) is one of the pangli plants which scattered in the region. (Malaysia, Indonesia, and Papua New Guinea). Although not yet classified as rare, this plant has begun to be rare, this is due to the absence of cultivation efforts, either traditionally or commercially.²

Traditional medicines are ingredients and ingredients in the form of plant, animal, mineral, herbal preparations (gelenik) or a mixture of ingredients thereof which have been used in medicine from generation to generation and can be expected to be in accordance with the norms applicable to society. 3One of the Pangli plants (*Pangium edule* R) is a type of tree-bearing plant that is very widespread in the regions of Indonesia, Malaysia, the Philippines, Papua New Guinea, Micronesia, and Melanesia. In the repertoire of Indonesian flora, Pangli (another name for pakem, kluwek).⁴

Pangli leaf (*Pangium edule* R) is a type of vegetable group commodity, all parts of the Pangli plant (*Pangium edule* R) can be utilized not only, fruit or seeds which have economic value because they can be used as vegetables or traditional cakes, but the stems, leaves and fruit or seeds can also be used. One that can

be found in plants and animals is the squalene compound, which is an organic compound that is synthesized in the liver and circulated in the blood. As a pharmaceutical product, squalen is produced through the extraction process of fish oil, especially in shark liver oil.⁶

Based on the above background, the researchers are interested in conducting research on the identification of squalen compounds contained in the methanol extract of pangli leaves (*Pangium edule* R).

RESEARCH METHOD

Types of research

This type of experimental research with a laboratory scale aims to identify squalen compounds.

Population and Sample

Population

Population is the whole object of research. The population in this study was pangli leaves (*Pangium edule* R). taken from the village of Tanjung Niara, Kec. Central Tobelo

Sample

The sample used in this study was the simplicia powder of fresh pangli (*Pangium edule* Reinw) leaves which was processed into powder.

Work Procedures

1. Collection of Pangli Leaves from Tanjung Niara Village
2. Wet sorting (Selection of fresh and damaged materials)
3. Washing hear running water
4. Chopping
5. Drying Pangli Leaves in the morning sun around 7-10 am
6. Dry sorting (selection of ingredients that have been dried)
7. The dried leaves are mashed, then sifted and weighed 200 grams

8. Put into the container that has been prepared and pour 600 ml of methanol in the container until it passes the limit of powder content / sympilisia.
9. Stir until evenly distributed, then cover the container using aluminum foil
10. Extraction was carried out by maceration for 5x24 hours and remaceration for 2x24 hours, stirring occasionally.
11. Filter using filter paper
12. Separate the solvent by evaporating using a vacuum evaporator until a thick extract is obtained.
13. The thick extract of pangli leaves is weighed and labeled
14. Viscous extracts were identified using the GC-MS tool

RESULTS

1. Pangli Leaf Sampling (*Pangium edule R*)

Pangli leaves are taken in the village of Tanjung Niara, Kec. Central Tobelo on 15 October 2020, at 13.00 WIB. Pangli leaves (*Pangium edule R*) taken are young leaves, taken directly from the tree so that the compounds contained in pangli leaves are not lost. After obtaining pangli leaves that have been cleaned with running water, then the pangli leaves are chopped into small pieces then dried under the sun. Then the pangli leaf is taken, then dried again by chopping it or making it into small pieces, which aims to expand the surface of the raw material because the wider the surface, the faster the raw material will dry, then wind it up. After drying for a while then the sample was weighed again and obtained a dry weight of 200 grams.

2. Preparation of Pangli Leaf Methanol Extract (*Pangium edule R*)

The dry weight of the 200 gram pangli leaf sample was crushed using a grinding tool to obtain a fine powder. After refining, sieving using a mesh number 40 sieve and obtaining a fine powder weight of 200 grams, then macerated using methanol solvent with a ratio of 1: 3 (1 gram of sample in 30 ml of methanol) for 5 days, then the ethanol extract of pangli leaves is filtered and the filtrate is taken and the residue is removed. Maceration

again for 2 days (remaseration), then evaporated using a vacuum evaporator to obtain pangli leaf extract. The pangli leaf extract obtained was black-green in color as much as 26 grams.

3. Analysis of Squalen Compounds on GC-MS Tool

Table 1. GC-MS Test Results on Pangli Leaves (*Pangium edule R*)

Type / Sample Code	Name of Compound	Content (%)
<i>Pangli Leaves</i>	3R-acetamido-4C,6C-Bis(acetoxy)-5T-dimethylamino-cyclohexene	1,03
	Neophytadiene	5,21
	+) -2-endotracheal intubation, 3-endprtracheal intubation dimethylborna mE	1,25
	Hexadecanoic acid-	15,08
	Phytol	10,33
	(9Z)-9,17-octadecadienal	3,01
	Octadecadienal acid	24,60
	3.5-dimethyl-1-dimethyldodecysilyloxbenzene	1,62
	Squalen	21,22
	Vitamin E	1,84
	Anisole, m-(2-nitrovinyl)	4,07
	2-(1-methyl-tetrahydrobenzopyrazol-4,5,6,7-3-Yi)- 6-(2-methyl-tetrahydrobenzopyrazol-4,5,6,7-3-Yi) pypiridene	2,59
	Spinasterone	1,23

DISCUSSION

Pangli leaf (*Pangium edule R*) is a plant from flora germ that produces fruit that can be consumed and has potential as drugs and spices. Pangli leaves (*Pangium edule R*) can also be used as snacks, spices, preservatives, and antiseptics. Pangli leaves (*Pangium edule R*) can also be classified as tree versasite because almost all parts of this plant species can be used.

In this study, the methanol extract of pangli leaves using GC-MS (Gas-SpectrometiMass Chromatography) proved that the pangli leaf contained squalen compounds. Based on the test results of the

pangi leaf extract sample in the table above, that the squalen compound analysis in the sample test used the GC-MS tool with a concentration of 21.22%. While the highest concentration was 24.60% Octadecadienal acid and the lowest concentration was the compound, 3R-acetamido-4C, 6C-Bis (acetoxy) -5T-dimethylamino-cyclohexene 1.03%. In this study the results of the analysis of squalene compounds were marked by the presence of peaks on the chromatogram and mass spectrum based on the results from the detector.

The content of squalen compounds is also found in cucut fish oil by 3.15%. This shows that pangi leaves have a higher content of 21.22% compared to shark oil, which is 3.15% .24

The compound Squalen is the main hydrocarbon found in shark liver oil. Squalene from shark oil is mostly used in the pharmaceutical and cosmetic industries. Squalene compound is one of the ingredients contained in cucut fish oil. The identification of squalen compounds contained in cucut fish oil was tested semi-quantitatively by using GC-MS. The analysis was carried out to determine the components of the compounds contained in the cucut fish oil. The chromatography peaks show that cucut fish oil contains no less than 22 peaks which illustrates there are 22 types of organic compounds which are the formation of fatty acids and their derivatives. Squalene is at peak 20 with a molecular weight retention of 410.39% / mol. Chromatography of the compounds contained in cucut fish oil. While the squalene spectrometer contained in cucut fish oil.

The results of the mass spectrometer show that the base peak of 691 m / z with a retention time of 23.35 minutes is a squalene compound which has a 99% similarity index to the database library compound.

CONCLUSION

Based on the results of the analysis of the pangi leaf sample (*Pangium edule* R), it can be concluded that the results of the analysis on the GC-MS tool contained

several chemical compounds contained in pangi leaves with different concentrations. The compounds identified in this study were squalen compounds in the pangi leaf sample with 21.22% concentration.

SUGGESTION

1. It is hoped that in the future the government will be more supportive of adequate facilities and infrastructure in researching fresh natural medicinal ingredients for students to further improve their work.
2. It is hoped that the tools in the laboratory will be further improved, in order to facilitate research.
3. Like further research, in order to develop this research so that it can become a drug preparation that can benefit the community.

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