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## IDENTIFICATION OF HEXADECANOIC COMPOUNDS IN SEAWEED EXTRACTS (*Caulerpa lentillifera*)

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### ABSTRACT

**Introduction:** *Caulerpa lentillifera* Sea Grape is a type of green seaweed that thrives in the waters of the Maluku Kei Islands and can be found throughout the year. Seaweed is one of the leading commodities with potential as functional food. Seaweed is rich in fiber, vitamins and minerals and is a source of natural antioxidants that are easily available and available in quite abundant quantities. The purpose of this study was to identify the Phytol compound in the Methanol Extract contained in Sea Grapes (*Caulerpa lentillifera*) using the GC-MS method.

**Research Type:** This is an experimental study, where fresh Sea Grapes are taken and washed with running water, then chopped and dried in the sun until the sample is completely dry after drying, mashed and macerated using methanol liquid for 5 days after it is filtered then evaporated using a rotary evaporator until obtaining a thick extract then GC-MS test was performed.

**Results:** obtained that Sea Grapes (*Caulerpa lentillifera*) contain compounds such as Hexadecanoic, Neophytadiene 8.41%, (2E) -3,7,11,15-Tetramethyl-2-hexadecene 3.35%, 3,7,11, 15-Tetramethyl-2-hexadecen-1-ol 2.20%, Nonadecane 1.18%, 1-Piperidynyl-2-triethylsilylethane 3.92%, Phytol acid 3.92%, beta-monooleid 1.86%, aminoethanethiolsulfuric 1, 95%, 9-Octadecenoic acid 1.34%, Tanoadanoid-Hexadanoid 1.34% acid 31.24%, beta-monooleid 1.86%, Aminoethanethiolsulfuric acid 1.95%, 9-Octadecenoic acid 1.34%, T-1, Squalene 1.02%.

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**Conclusion:** From the results of GC-MS obtained in seaweed samples *Caulerpa lentillifera* contains a concentration of *Hexadecanoic* compound of 3.72%, which functions as a source of calories and antioxidants, is a compound that functions as a good bacterium in the digestive system to get rid of metabolic waste that is not needed.

## INTRODUCTION

Indonesia is the world's largest archipelago with more than 17,500 islands. The Sea region is 75% (5.8 million km<sup>2</sup>) of Indonesia's total region with the second largest coastline (about 81,000 km) in the world after Canada. A total of 15 provinces in Indonesia are being involved in seaweed cultivation.<sup>1</sup> Sea Wine *Caulerpa Lentillifera* is one type of green seaweed that thrives in the waters of the island of Kei Maluku and can be found year-round (Tapotubun et al. 2016; Mailoa et al. 2017). Local people know the *Caulerpa Lentillifera* with the designation "lat" used as fresh vegetables have even become one of the favorite menu of Kei Islands.<sup>2</sup>

Seaweed is one of the most excellent commodity that is potentially a functional food. Seaweed is rich in fiber, vitamins and minerals and is a source of natural antioxidants that are easily acquired and available in quite abundant quantities. 3 Antioxidants are compounds that can bind to free radicals in the body. In protecting the body against radical lines, antioxidant substances serve to restore the less-complete free electron in free radicals from the molecules that inhibit the chain. Antioxidants are capable of acting as the development of hydrogen radicals or can act as free radical acceptors that can delay the initiation phase of free radical formation.<sup>4</sup>

Based on the results The study showed that the Golobe (*Horstedtiaalliacea*) fruit is composed of Hexadecanoic acid (palmitic acid) of 7.29%. Useful to stimulate insulin growth that plays a role in treating diabetes. 5 based on data and the results of the above research then authors interested in taking the title of research on the identification of Hexadecanoic compounds contained in the extract Seaweed (*Caulerpa lentillifera*).

## METHODS

Used in this study is a type of experimental study with a sample of sea wine (*Caulerpa lentillifera*). The research was conducted in the Laboratory of Pharmacy study Program of the College of Health Sciences Makariwo Halmahera, the time required by

researchers for this study that is approximately 1 month. Tools and tool materials used in this research are; Analytical balances, ovens, blenders, jars, sieve, stirrer, filter paper, aluminium foil, gurning, erlemeyer, Beaker glass, measuring cup, pipette drops, rotary evaporator, GC-MS tool, and other supporting devices such as cameras, stationery and Calculator. The material used in this study is Sea wine (*Caulerpa Lentillifera*) acquired from Tagalaya village of Tobelo district North Halmahera and Solvent Methanol.

## Working procedure

Sea wine (*Caulerpa lentillifera*) obtained from Tagala village. Fresh sea wines are taken directly by hand, then washed with flowing water cut small-small/chopped, then dried in the sunlight until the sample is completely dry. The sample of the sea wine with a weight of 500gr then was overtaken using a refine, the powder of sea wine was sifted with the appropriate sieve of the mess after it was weighed back then inserted in the container and labeled.

Put the sea wine powder by 250gr into a maceration vessel and then pour methanol, then close the maceration vessel and leave for 5 days in place protected from light while stirring every day. After 5 days then do the filtering to separate filtrate and residue. Then collect filtrate and then wipe with a rotary evaporator to obtain a condensed extract.

## Seaweed Sampling Research Results

### (*Caulerpa lentillifera*)

Seaweed type (*Caulerpa lentillifera*) obtained from Tagalaya village in Tobelo district North Halmahera, taken then washed with water flowing until clean, after cleaning the sample is dried under the light The morning sun at 08.00-11.00 until the sample is completely dry.

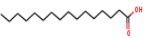
### Seaweed Methanol Extract Manufacture (*Caulerpa lentillifera*)

The dried seaweed sample is smoothed out using a soft, fine-grained powder and then sifted using a sieve. The fine powder is then extracted using the method of meseration with methanol solvent for 5 days while stirring every day. The result of fine powder of sea wine and then filtered using filter paper until filtrate and residue, filtrate then evaporated using rotary evaporator

until obtained by green sea wine extract Weighing 3.72 gram.

### Hexadecanoid Compound analysis results on tools GC-MS

**Table 1.** Results of sea wine samples test with GC-MS tool.

Sample Type	Compounds	Content %	Chemistry formulas
Rumput Laut ( <i>Caulerpa lentillifera</i> )	Hexadecanoid	3.72	 $C_{16}H_{32}O_2$

## DISCUSSION

Seaweed is one of the most eminent commodity that is potentially functional food. Seaweed is rich in fiber, vitamins and minerals and is a source of natural antioxidants that are easy and available in abundant quantities. Seaweed plant (*Ceulerpa lentillifera*) is also believed to be a plant that has many benefits for traditional medicine. According to information obtained that the community, especially in the island of the village of Tagalaya in sea wine utilization rate by the community is still low due to the lack of understanding of society, especially the housewives related to nutritional value and The benefits or efficacy of sea wine for health.

Based on the identification of compounds performed using the GC-MS method proved that seaweed (*Ceulerpa lentillifera*) contains the compound *Hexadecanoid*. From the sample test results of seaweed extracts that can be seen in Table 4.1 shows that the content of *Hexadecanoid* compounds on seaweed (*Caulerpa lentillifera*) is a concentration of 3.72% is a palmitic acid or hexanic acid that is widely Used in the field of cosmetics and staining while in terms of nutrition, palmitic acid is an important source of calories but has low antioxidation power.

Another study showed that palmitic acid content is similar to that found in breast milk. And *Hexadecanoid* compounds that are found in various types of plants are scientifically proven to help reduce cholesterol. The nutritional content provides a variety of health benefits such as improving brain function, reducing the risk of forming blood clots in the arteries (antithrombotic effects), and lowering blood pressure.

Based on the analysis of the GC-MS profile acquired that is the *Hexadecanoic* compound where the concentration of seaweed methanol extract (*Caulerpa*

*Lentillifera*) obtained can serve as a source of calories and antioxidants. Where from the research results of Mapanawang AL (2016) states that antioxidants are capable of acting as the development of hydrogen radicals or can act as a free radical acceptor that can delay the initiation stage of free radical formation. From the results of the analysis that the compound *Hexadecanoid* is a compound that as a good bacteria in the digestive system to remove the unneeded residual metabolism where the metabolism are all the chemical reactions that occur in the organism, including those that occur in the cell. From the results of the analysis Mahmiah (2017) states that R. Apiculate is a mangrove known as black mangrove Which grows in a rocky, rugged land located near the sea also has the centration of *Hexadecanoic* compounds which are potentially as antibacterial, antioxidant and antidiarrhoea. Based on the results of the analysis of Jaya (2016) that *Tetraselmis chuii* (T. Chuii) includes green microalgae containing proteins, fats, essential fatty acids, and sterols. States that the *Hexadecanoic* compounds produced from microalgae metabolites have biological activities such as antibacterial, antiviral, antitumor, and anticoagulating.

## CONCLUSION

Based on the results of the analysis obtained on the sample of seaweed *Caulerpa Lentillifera* contains a concentration of *Hexadecanoid* compounds of 3.72%, which serves as a source of calories and antioxidants, is a compound that serves as Good bacteria in the digestive system to dispose of unneeded residual metabolism.

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