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IDENTIFICATION OF THE COMPOUNDS THAT CONTAINED IN EXTRACTING METHANOL LAOR (*POLYCHAETA*)

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ABSTRACT

Laor/ marine worms with scientific name polychaeta is a marine biota that appears once in a year. Laor /polychaeta marine worms in a "rao" village position only used as food that is believed to help the growth of the brain and there has never been research on the lava/polychaeta sea worms. This study aims to identify the compounds contained in the methanol extract of laor/polychaeta marine worms. This research is a pure experimental research conducted in pharmacy laboratory Halmahera. By using the maceration method as a separator, with methanol chemical solvent as a liquid and a method of gas chromatography mass spectrometry is used to identify the compounds contained in the methanol extract of laor polychaeta marine worms. The result showed that the polychaeta Lauric acid contains 2,042%, myristic acid 3,388%, myristoleic acid 0,130%, palmitic acid 25,645%, palmitoleic acid 2,148%, stearic acid 0,481%, eicosaic acid 3,866%, dha 2,458%, medium chain 5,560%, saturates 40,316%, monoenes 18,968%, n-6 29,861%, n-3 29,494%, mg 2,132%, mg/ml 21,321%, nervonic acid 1,299%, erucic acid 12,891%, behenic acid 0,654%, cis-8,11,14-eicosatrienoic 9,956%, cis-11,14-eicosadienoic 4,056%, linolenic acid 2,356%, γ-linolenic acid 0,400%, stearid acid 14,017%, oleic acid 11,655%.

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INTRODUCTION

Indonesia as archipelago country have the coastline approximately 81,000 increase km and marine areas that very wide. This makes the Indonesian waters have the potential of the natural wealth of the great sea with the level of high biodiversity, where inside there are many different types of marine organisms. The utilization of marine organisms is not only limited as food, but

also as a source of natural ingredients that potential as the raw material of drug.

Some of the organisms are capable of producing chemical compounds to mempertahankanandirinya attacks of the predator. The research results show many of the chemical compounds had the potential to inhibit the growth of bacteria and active inhibits the growth of cancer cells and bio activity of echelons. The chemical compounds with bioaktif is thought to be in the featured man as a natural drug materials. Organisms that already in the featured as ingredients in natural medicine including a sponge, seaweed, worms sea, kembangan pass pool do not forget, and molluscs.1

The sea worms or scientific name *Polychaeta* have value is important as the livestock for the parent of the shrimp, marine aquarium fish especially in the process of maturing gonad and hatchery. The type of *Polychaeta* that many used including worm eunicidae family Nereididae and *Polychaeta Nereis sp.* Is one type of which including *Nereididae family*, which is used as the livestock of the mother in pembenihan shrimp. Research also has been using the three types of extracting from the *polychaeta* 0.5 percent and neutral fat for livestock mother shrimp *Marsupenaeus japonicas* that shows extracting *polychaeta* especially fat neutral role in the process of the hatchery shrimp master windu compared to the fraction of the other. In addition the womb steroid hormone on *polychaeta* high also played in the parent vitelogenesis shrimp.2

In addition to the wealth of the type of the aspects of reproductive biology laor worms in Maluku waters also not many are examined. Even though the knowledge of the aspects of the reproductive biology of worms laor can be the first step to know the potential of aquaculture business biota the sea. Remember this, on the business akuakultur, worms sea *Polychaeta* from *Nereis virens type* that naturally only once a year (memijah bridal week period is similar with worms laor), can be manipulated in order to able to memijah once a week in the laboratory scale.3

The Benefits of Laor/Worms Sea (*Polychaeta*) To the community

People consume laor as food ingredients that have been cooked in advance. They believe if consume laor/worms sea (*polychaeta*) can increase appetite and ability to learn. The waters of the village of posi Posi Rao", South Morotai Sub- district, West Morotai Island is one of the coastal areas that berkarang. Each year, certain dimusim, the region where the marriage of worms laor. Thus these waters is one of the tempet enough to take samples.

An overview of the Library

Classification of **Laor or worms sea**(*polychaeta*):
Kingdom : *Animalia*

Phyla : *Annelida*
The order of the : *Eunicida*
Family : *Eunicidae*
The genus : *Eunice*
The species : *Eunice Viridis*
Class : *Polychaeta*

Laor or sea worms (*polychaeta*) is one of the unique biota Maluku waters. In April or may on the night of the full moon or a few days afterwards, biota is gathered together in the amount of abundance around the surface of the water to perform marriage externally. At that time, using traditional seser, this extraordinary animal was arrested by the local population in the beaches berkarang to made as a traditional food ingredients. The sea from the class *polychaeta worms* that most appears on when the season is *Eunice Siciliensis* with the green color on the type of female with brown color on the type of bull.

Part of the body (epitoke laor) worms brown male and female worms green up to the surface of the water while pan the body or dancing.

Earlier Research explained that the reproduction on worms sea *polychaeta* outline can be done in two ways, namely by klonal (asexual beings) and by epitoky (sexually). Reproduction in klonal done good with regenerate part of the body that is cut off and with formed *stolon* while on reproduction in epitoky, half or all parts of the body of worms, at certain times, will become mature gender.3

Invertebrates sea producing chemical compounds (*chemical defense*) that function to England holding themselves from the predator, Prevent bacterial infections, help production process and prevent electric shock ultra violet Ray. Worms that live in the sea Benthos produce bromophenol and bromopyrrole. In addition to these compounds produced by the *polychaeta* also in produce by another, coral, and tunicate. Worms from perirairan Nahalia has a protein content of 17,13%. In China worms sea has long been used as a traditional medicine in treating tuberculosis, officers function of the stomach and the spleen and the restoration of the health of that caused by pathogens. Extracting ethanol worms sea has the potential as anti diabetes by tests in vitro which may inhibit the activity of the enzymes α -glukosidase of 16-24 vat. non-essential amino acids and the highest there on glutamate acid namely 6,53% on fresh sea worms and worms sea *freeze dry* 8,53%. Amino acid content of the highest tambelo there on glutamate acid namely 4.35%.4

Table 1. The chemical composition of the sea worms4.

The womb %	Fresh sea worms %	The sea worms freezedry %
The level of water %	85,25 ± 0.42	13,69
The level of protein %	10,11 ±	56,35

The womb %	Fresh sea worms %	The sea worms freezedry %
	0.80	
The level of abu %	3.03 ± 0.19	15.08
The level of fat %	0.54 ± 0.29	9.82
The level of carbohydrates %	1.07 ± 1.23	5.06

The working principles of mass Spektroskopi (*Mass Spektrometry*)

Generally in mass spectrum acquired by changing the compound a sample to the ions that moves quickly separated based on the comparison of the masses against electrostatic. The ion menghasilkanberkas Spektroskopi capable of a substance test, separating the ions into the appropriate spectrum with a comparison of the mass of the load and record the relative abundance of each type of ions exist. Generally only positive ions in learn because of negative ions produced from the tangle of little.

Decosahexaenoic Acid (DHA)

Decosahexaenoic acid is the omega-3 fatty acids which is the main structural components of the human brain, cerebral cortex, skin and the retina. This can be inobtain from linoleic alpha acid or obtained directly from the breast milk), fish oil, or algae. The structure of the DHA is amino acid (karboksilat oats) with 22 carbon (*decosa chainis* the Greek for 22) and six (*hexa*) *cis* double bon (-*en*-). With the first phrase ties that is located on the third carbon from the end of the omega.

On man DHA can be obtained from the food or can be converted in a small amount of *Eicosapentaenoic Acid* (EPA) through *Decosapentaenoic acid* (DPA claims) as the substance between. DHA many used as supleman food. These programs had been held in use especially on infant formula. DHA also in convinced useful for those with a history of heart disease, for premature infants and to support the development of a healthy brain especially on small children along with the development of the retina.

Some DHA produced is vegetarian products in eksrtaksi from the algae and compete in the market with fish oil containing DHA and omega 3 echelons as EPA. Both fish oil and DHA odourless odorless and after processed into eat addition. Essential fatty acids are fatty acids that are needed by the body for growth and normal function of the network while the body cannot mensistensinya. Lmak acid groups included in this type is linoleic alpha acid (omega-6) and asam linolenat (omega-3).

An instance of fatty acid arachidonic acids from linoleic acid, eicosapentaenoic (EPA), and dekosahexaenoat (DHA) from asam linolenat. Essential fatty acid is a precursor of a group of compounds eicosanoids that are similar to the hormone prostagladin, prostasiklin, and leukotien. Compounds

compounds are regulating blood pressure, widened the heart, the function of the immune system, stimulation of the nervous system, contraction of the muscles and wound healing.¹

Many studies also have reported differential effects of the EPA, DHA and rhein both in clinical settings and laboratory dibangku there are several factors that contribute to the differential effects of EPA and DHA, including difference also directly and not directly, transcription factors impact the length, degrees boredom and stability of fatty acid on the benefits and efficiency differentials for the incorporation of fatty acid become antibody.⁷

The nature of the anti cancer DHA suda good is inherent in the various experimental model system. The ability to selectively inhibit viabilitas DHA tumor cells while show little toxicity toward normal cells and the history area and secure. DHA as an anti-cancer that promising agents for combination therapy mechanisms of research has shown that peroksidasi lipid induced by DHA in tumor cells plays an important role in the anti cancer action.⁸ Acid decosahexaenoic Acid (DHA) involved in signaling neurons and are considered to have a role in the neuroprotection effect. DHA also protect against cardiovascular disorders including inhibition agragasi thrombocytes but the mechanism of action and molecular species or metabolite is responsible to protect the effect of DHA did not know. On the contrary DHA inhibits the conversion of AA to Eicosanoic bioaktif compete with AA on the level of subtrat.⁹ Decosaheksaenoic Acid (DHA) in evolution for more than 600million years as a component of the cell membrane.¹⁰

The study of truth confirm that the presence of uric acid increased especially in the developed countries to population is the foods that contain a high proportion of purin.¹⁰

The chemical formula : C₂₂H₃₂O₂
Molar mass : 328,488 g/mol
Melting Point : -47,2oF(-44oC)
Kepadatan : 943 kg/m³
Boiling Point : 883,1oF (446,7oC)
IUPAC Name : Decosahexaenoic acid
Another Name : Fatty Acid unsaturated fats

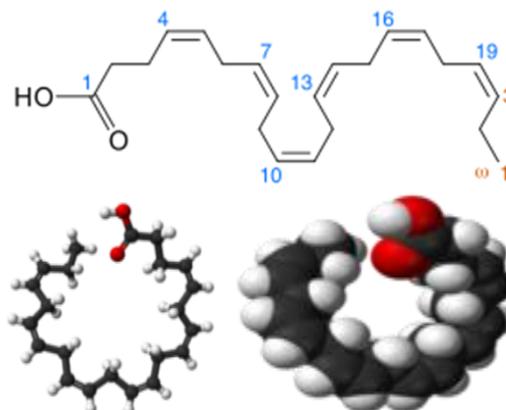


Figure 1. Dekosahexaenoic acid Acid (DHA)

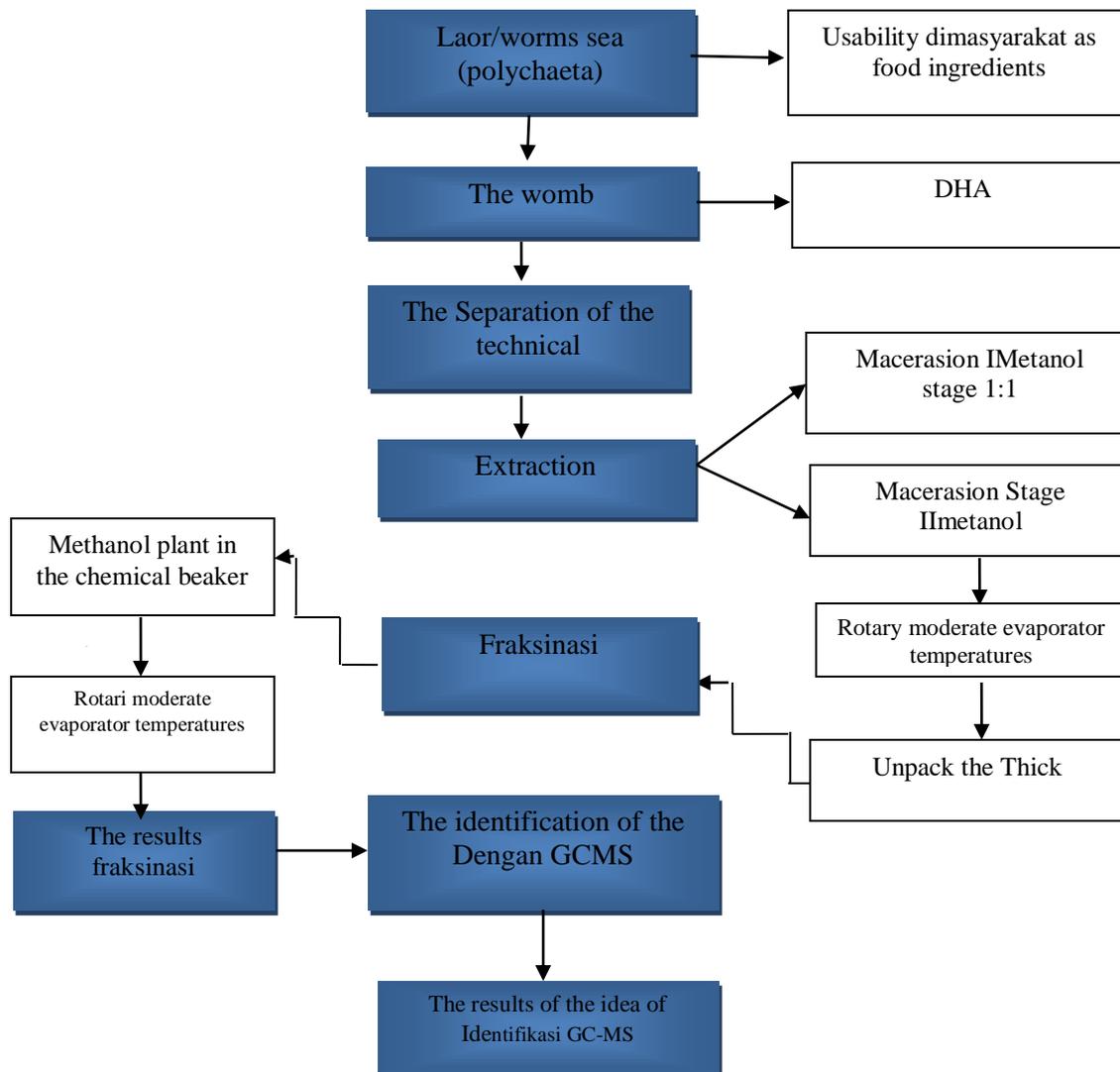


Figure 2. The framework of the concept

METHODS

Work Procedures

The making of Extracting Worms Sea (*Polychaeta*)

Laor or sea worms (*polychaeta*) taken is still fresh, cleaned or in the dishwasher, then dried. Laor or sea worms (*polychaeta*) that have dried up in the chop after that in the create with powder using the blender. Laor powder or worms sea (*polychaeta*) diekstraksi using methods maceration.

First 100gr laor powder or worms sea (eta) dimaserasi polycha with solvent methanol for 5 days on glass container or bottled 1-3cm above the debris. The results from meserasi 5 days in store and oily residues in add with the solvent methanol while in stir then in maceration again for 2 days. The results from maceration for 2 days in the sieve, oily residues in

squeeze excess and results filtrat maceration into two in the mix with the result of the filtrat maceration first and in uapkan using rotavator until obtained extracting thick methanol.

How to work of the identification of a compound Decosahexaenoic Acid using the appliance GC-MS

Thick methanol difraksinasi extract in the beaker chemicals, and done with how to merge updates the GC that function to test the purity of certain ingredients, or separate from the various components of the mixture and can help in mengidentifikasi complex compounds.

And then dilanjutks using the appliance MS function because pangubah compound a sample become positive ions and negative ions produced from the source laor or sea worms (*polychaeta*).

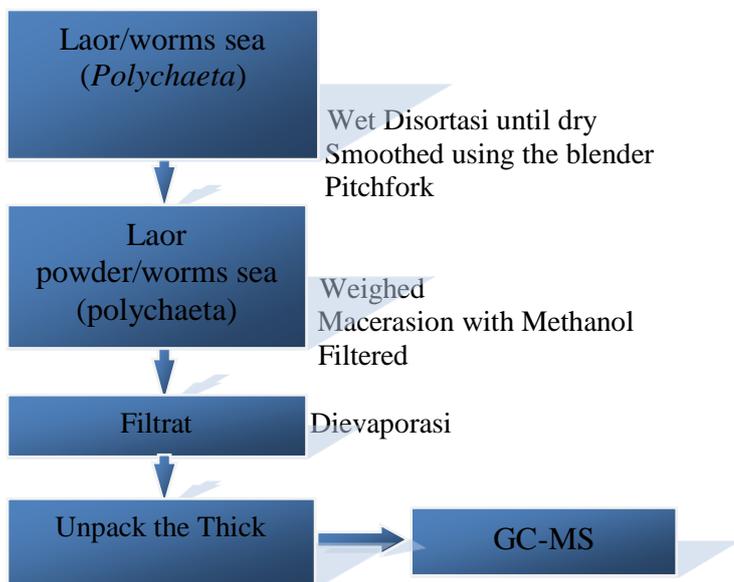


Figure 3. Making Flow Extracting Laor /Worms Sea (*Polychaeta*)

RESULTS

This research is done in the integrated laboratory pharmaceutical study program high school health science halmahera. In this research the sample used laor/worms sea (*polychaeta*) which was taken from the waters of the village of posi posi rao". Samples laor/worms sea (*polychaeta*) in take on the morning hour 6-7 and night 6-7. After the sample take washed and cleaned with clean water after that laor/worms sea (*polychaeta*) that clean already plugged into the leaf boku and in the smoke until dry for 1 days.

Laor/worms sea (*polychaeta*) who embarked on the dry chop after that in the create with powder use the blender to produce fine powder. Samples suda become dimaserasi powder using the solvent methanol for 5 days. Then the samples in macerasion for 5 days in the sieve and in take filtratnya. From laor Filtrat/worms sea (*polychaeta*) with green elders then carried out the evaporation during 3 hours until elector extracting thick, unpacking with thick laor/worms sea (*polychaeta*) green elders.

Table 2. The Test Results Table Gc-Ms Laor/Worms Sea (*Polychaeta*)

Samples	Compound	The womb %
Laor/worms sea (polychaeta)	Lauric acid	2,042
	Myristic acid	3,388
	Myristoleic acid	0,130
	Palmitic acid	25,645
	Palmitoleic acid	2,148
	Stearic acid	14,017
	Oleic acid	11,655

Samples	Compound	The womb %
Laor/worms sea (polychaeta)	Lonileic acid	2,557
	Y-linoleic acid	0,400
	Linoleic acid	2,356
	Cis-11,14 eicosadienoic	4,056
	Cis-eicosatrienoic-8,11,14	9,956
	Behenic acid	0,654
	Euric acid	12,891
	Nervonic acid	1,299
	Fig Tree	0,481
	The Epa	3,688
	Dha	2,458
	Medium Chain	5,560
	Saturates	40,316
	Monoenes	18,968
Laor/worms sea (polychaeta)	N-6	29,861
	N 3	5,294
	Mg	2,132
	Mg/ml	21,321

DISCUSSION

Laor/worms sea (*Polychaeta*) including in the phylum annelida class polychaeta, family eunicidae. Laor/worms sea (*Polychaeta*) in the consumption as food ingredients by the community. Laor/worms sea (*Polychaeta*) contains a compound decosahexaenoic acid (no jenu fatty acid omega-3) compound is a combination of some of the elements that formed through chemical reactions have compounds that berbedah nature with the elements constructors 2 hydrogen atoms and 1 oxygen atom can be joined to form the water molecules (H₂O). Compound decosahexaenoic acid (no jenu fatty acid omega-3) found on the grass of the sea, know of canned sardine and breast milk.

The results of the previous research explains that the compound decosahexaenoic acid can help the growth of the brain and nervous coir and the function of the vision in the first 6 months of life. In adults DHA also help the work of the brain and the ability to learn. In addition DHA useful in lowering heart disease, DHA benefits the other is to prevent the accumulation of plaque on the walls of the blood vessels by fat heart (LDL), so that decrease the risk of heart disease and stroke, besides DHA also help prevent the emergence of cancer diseases and slow down the aging.¹³

CONCLUSION

Based on the results of research using the method GC-MS in deduce that laor/worms sea (*Polychaeta*) contains a compound decosahexaenoic acid 2,458%

(fatty acid unsaturated fats omega-3) is useful to help the growth of the brain and nervous coir and the function of the vision in the first 6 months of birth, on adults dha also help the work of the brain and the ability to learn besides decosahexaenoic acid useful in lowering the risk of heart disease, decosahexaenoic acid also helps to prevent the emergence of cancer diseases and slow down the aging process.

Suggestions

Based on the conclusion above then the author meberi suggestions as follows:

1. For educational institutions

The results of this research can be an additional reference for students of pharmacy especially to increase the knowledge about the benefits of laor/worms sea (*Polychaeta*).

2. For research location

So that the results of this research become inputs for the community and are able to take advantage of the laor/worms sea (*Polychaeta*) to the interests of the modifications given to drugs.

3. For the next researcher

The results of this research can become the material inputs as a reference in developing further research can develop the results of this Scientific Paper better

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