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IDENTIFICATION OF DECOSAHEXAENOIC ACID COMPOUND CONTAINED IN METANOL LAOR (POLYCHAETA) EXTRACT

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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 raso 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 stikes halmahera. By using the maceration method as a separator, with methanol 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%, ara 0,481%, epa 3,866%, dha 2,458%, medium chain 5,560%, saturates 40,316%, monoenes 18,968%, n-6 29,861%, n-3 5,294%, 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%, stearic acid 14,017%, oleic acid 11,655%.

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INTRODUCTION

Indonesia as archipelago country had coastline for about 81.000 km and very wide sea area. This made Indonesian marine had big potential of natural wealth of sea with high biologic diversity, where there were any kinds of sea organism inside. The utilization of this sea organism was not only limited as food, but also as natural source that was potential as basic material of medicine.

Some sea organisms were able to produce those chemical compounds in order to defend themselves from predator fighter. The research result showed that much of those chemical compound were potential in hampering the growing of bacteria and actively hampered the growing of cancer cells and also other bio activities (Edrada *et al.*, 2000) dalam (Leiwakabessy 2011). Chemical compound with this bioactive was assumed able to be used as material of natural medicine. The sea organisms that had been used as material of natural medicine such as sponges, seaweed, marine worms, sea cucumber, and mollusks.

Marine worm with its science name *polychaeta* had important benefit as feed material for main shrimp (Olive, 1999), in (Rasidi, 2012) and sea decorative fish (Ignatius, 2001), on (Rasidi, 2012). Mainly in the process of maturing gonad and spawning (Wouters *et al.*, 2001; Coman *et al.*, 2007), in (Rasidi, 2012).

Kind of *polychaeta* which was much used included family of *Nereididae* and *eunicidae* (Brown *et al.*, 2011), in (Rasidi, 2012). *Polychaeta Nereis sp.* Worm was one kind that included into family *Nereididae*, that used as feed in the hatchery of shrimp (Costa *et al.*, 2000), in (Rasidi, 2012).

Based on the research (Nguyen *et al.*, 2011), in (Rasidi, 2012), also had used three kinds of extract form *polychaeta* for about 0,5% and neutral fat for the feed of shrimp *Marsupenaeus japonicas* which showed extract of *polychaeta* mainly neutral fat that played role in the process of spawning in the main shrimp tiger than other fraction. Furthermore, contain of steroid hormone at *polychaeta* was also high that played role in vitelogenesis of main shrimp (Meunpoul, 2007), in (Rasidi, 2012).

Based on the previous research about the utilizing of *polychaeta* as feed of main shrimp, it showed that *polychaeta* was able to fulfill needs of essential nutrient needed by main shrimp that couldn't be produced itself, so it must be fulfilled by natural feed (Woters *et al.*, 2001; Yuwono, 2005), in (Rasidi, 2012).

Instead the wealth of types, biologic aspect of reproduction of laor worm in Maluku marine hadn't been much studied yet. Even though, knowledge about biologic aspect of reproduction of laor worm could be the first step in order to know the potential of cultivation that sea biota. Considering that at the aqua culture business, marine worm *Polychaeta* from the kind of *Nereis virens* that naturally only spawn once time in a year (its mating period was similar with laor worm), could be manipulated in order to be able to spawn once a week at the laboratory scale (Shoreline *Polychaetes* Farms LLP, 2009), in (Pamungkas, 2009).

Since the research of Horst (1904, 1905), in (Pamungkas, 2009), in the Ambon marine which had been succeed to identify that animal as *Lysidice oele (Eunicidae)*, research note about special worm of Maluku marine, especially that was conducted by local researcher, was included rare. This made the economic potential of laor worm, until the recent time, hadn't need unearthed. Even though, at some developed country, marine worm of *Polychaeta* had become export commodity that could increase country's devise sources. England, for example, marine worm of *Polychaeta* from type of *Nereis virens (Nereidae)* was sold commercially to some other countries as natural feed for some sea biota. That England's special marine worm was proven rich of protein so that was good for the grow of fish and shrimps (Ager, 2004), in (Pamungkas, 2009).

The marine of Posi-posi Rao Village, South West Morotai Sub District, Pulau Morotai Regency was one of corrosive beach area. Each year, at certain season, that area became mating place of laor worm. Therefore, that marine area was one of representative place to take the sample.

METHODS

Type Of Research

Type of research conducted was experimental research that would be done at the Integrated Laboratory of Pharmacy Study Program of Sekolah Tinggi Ilmu Kesehatan Halmahera.

Experimental research was research that gave widely freedom for the researcher to do modification/intervention toward certain variable at certain condition. Mapanawang (2016).

Time Of Research

The research was conducted during 1 month from May until June 2017.

Sample Of Research

Sample on this research was laor or marSampel dalam penelitian ini adalah laor or fresh marine worm (*polychaeta*) taken from Posi-Posi Rao Village, South West Morotai Sub District, Pulau Morotai regency.

EQUIPMENTS:

- Oven
- Spatula
- Chemical glass
- Bunsen
- Erlenmeyer
- Rotavator
- Measurement glass
- Aluminum foil
- Three ports

MATERIALS:

- Marine worm (*polychaeta*) extract
- Methanol
- spirits

WORK PROCESS

Making of marine worm Sayur Lilin (*polychaeta*) extract

Fresh laor or marine worm (*polychaeta*) was taken, washed, then dried. The dry Laor or marine worm (*polychaeta*) was sliced then powdered by using blender. The powder of laor or marine worm (*polychaeta*) was extracted by using maserasi method.

First, 100gr of laor or marine worm (*polychaeta*) powder was done with maserasi with methanol for 5 days in the glass container or jar for about 1 – 3 cm above the powder. Result of 5 days maserasi was kept and the residue was added with methanol while stirred then given the maserasi again during 2 days. Result of 2 days maserasi was filtered, the residue was squeezed and the result of filtrate of second maserasi was mixed with the result of first maserasi and evaporated by using rotavapor until got thick extract of methanol.

Ways of Working to Identify Nonadecade Compound by Using GC-MS tool.

Thick extract of methanol was fractionated in chemical glass, then it was done by using GC tool that functioned to examine the purity of certain material, or separated as component from the mixture and could help in identifying complex compound, and then continued to use MS tool that functioned as compound of certain

sample became positive and negative ions which resulted from marine worm (*polychaeta*) source.

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 maceration 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 1. Gc-Ms Laor Test Results Table/Worms Sea (*Polychaeta*).

Samples	Compound	The womb %
Laor/worms sea (<i>polychaeta</i>)	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
	Lonileic acid	2,557
	Y-linoleic acid	0,400
	Linoleic acid	2,356
Laor/worms sea (<i>polychaeta</i>)	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

Samples	Compound	The womb %
	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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