IDENTIFICATION OF DECOSEAEHAENOIC 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 rao village posi-posi 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 containet in the methanol extrac of laor/polychaeta marine worms. This research is a pure experimental research conducted in pharmacy laboratory stikes halmahera. By using the mecaration method as a separator, with methanol solvent as a liquid and a method of gass cromatography mass spectrometry is used to identify the compounds contained in the methanol extrac of laor polycyaeta 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 35,294%, 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%, y-linolenic acid 0,400%, stearid 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 (Euniceidae), 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 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 macerasi method.

First, 100gr of laor or marine worm (polychaeta) powder was done with macerasi with methanol for 5 days in the glass container or jar for about 1 – 3 cm above the powder. Result of 5 days macerasi was kept and the residue was added with methanol while stirred then given the macerasi again during 2 days. Result of 2 days macerasi was filtered, the residue was squeezed and the result of filtrate of second macerasi was mixed with the result of first macerasi 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 so became 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).

<table>
<thead>
<tr>
<th>Samples</th>
<th>Compound</th>
<th>The womb %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laor/worms sea (polychaeta)</td>
<td>Lauric acid</td>
<td>2,042</td>
</tr>
<tr>
<td></td>
<td>Myristic acid</td>
<td>3,388</td>
</tr>
<tr>
<td></td>
<td>Myristoleic acid</td>
<td>0,130</td>
</tr>
<tr>
<td></td>
<td>Palmitic acid</td>
<td>25,645</td>
</tr>
<tr>
<td></td>
<td>Palmitoleic acid</td>
<td>2,148</td>
</tr>
<tr>
<td></td>
<td>Stearic acid</td>
<td>14,017</td>
</tr>
<tr>
<td></td>
<td>Oleic acid</td>
<td>11,655</td>
</tr>
<tr>
<td></td>
<td>Lonileic acid</td>
<td>2,557</td>
</tr>
<tr>
<td></td>
<td>Y-linoleic acid</td>
<td>0,400</td>
</tr>
<tr>
<td></td>
<td>Linoleic acid</td>
<td>2,356</td>
</tr>
<tr>
<td></td>
<td>Cis-11,14-eicosadienoic</td>
<td>4,056</td>
</tr>
<tr>
<td>Laor/worms sea (polychaeta)</td>
<td>Cis-11,14-eicosatrienoic-8,11,14</td>
<td>9,956</td>
</tr>
<tr>
<td></td>
<td>Behenic acid</td>
<td>0,654</td>
</tr>
<tr>
<td></td>
<td>Euric acid</td>
<td>12,891</td>
</tr>
<tr>
<td></td>
<td>Nervonic acid</td>
<td>1,299</td>
</tr>
<tr>
<td></td>
<td>Fig Tree</td>
<td>0,481</td>
</tr>
<tr>
<td>Samples</td>
<td>Compound</td>
<td>The womb %</td>
</tr>
<tr>
<td>------------------</td>
<td>-------------------</td>
<td>------------</td>
</tr>
<tr>
<td>The Epa</td>
<td>3,688</td>
<td></td>
</tr>
<tr>
<td>Dha</td>
<td>2,458</td>
<td></td>
</tr>
<tr>
<td>Medium Chain</td>
<td>5,560</td>
<td></td>
</tr>
<tr>
<td>Saturates</td>
<td>40,316</td>
<td></td>
</tr>
<tr>
<td>Monoenes</td>
<td>18,968</td>
<td></td>
</tr>
<tr>
<td>Laor/worms sea</td>
<td>N-6</td>
<td>29,861</td>
</tr>
<tr>
<td>(polychaeta)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>N 3</td>
<td>5,294</td>
</tr>
<tr>
<td></td>
<td>Mg</td>
<td>2,132</td>
</tr>
<tr>
<td></td>
<td>Mg/ml</td>
<td>21,321</td>
</tr>
</tbody>
</table>

**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 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.

**ACKNOWLEDGEMENTS**

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