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ORIGINAL ARTICLE

**IDENTIFICATION OF NONADECANE COMPOUND
CONSIST IN EXTRACT OF LILIN VEGETABLE
(*Setaria Palmifolia*)**

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ABSTRACT

Indonesia is one of state with the biggest natural capital in the world which has more than 30.000 species of high level plants. The using of those natural materials as traditional medicine had been done since ages and ages ago. That are about 940 from 30.000 species included in multifarious biological plants which have potential to be developed become medicines of various diseases, so that it had been developed products of traditional medicines, in this case is horticulture products. One of plant cultivated traditionally, especially in Eastern Indonesia, both as vegetable and medicine plants is vegetable plant of lilin (*Setaria Palmifolia*).

Research Objectives: To identify Nonadecane compound consist in vegetable of lilin (*Setaria palmifolia*) extract by using Gc-Ms method. The research method was experiment research with sample of lilin vegetable (*Setaria palmifolia*).

Research Result: Sample taken from fresh fruit picked directly, then made into powder by soaking with methanol. After that, it tested by using Gc-Ms tool.

Conclusion: From the test result, it found that lilin vegetable (*Setaria palmifolia*) consisted of Nonadecane compound with content of (39,79%) that potentially as antioxidant.

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INTRODUCTION

Indonesia becomes one centre of medicine plants in the world. Haven't all the plants been known the benefit and special quality. Varieties of plants, roots, and other natural materials are mixed as medicine to cure the diseases. Those ingredients used to keep the body healthy, prevent the diseases, and some of them as self-beauty. The expertness to mix those materials inherited by the forefather in heritable (Parwanto, 2013).

Indonesia was known as area which is very rich of natural resources, both the numbers and varieties. Government increases and actuates and the using of nutrition sources and natural herbal medicines from Indonesia. The using of herbal medicine closely related with traditional treatment inherited from generation to generation, also made and sold by traditional herb seller.

The using of natural materials as traditional medicine in Indonesia had been done by our forefather since ages and ages ago. Indonesia, with more than 200 billion population, has many benefit plants. Those plants produce secondary metabolite with molecule structure and identities of 30.000 plants species and 940 of them are included into multifarious biological plants which have potential to be developed become medicines of various diseases, so that it had been developed products of traditional medicines, in this case is horticulture products.

Horticulture products have very important benefit for human life, such as vitamins and minerals sources. Else, horticulture products have price and are able to increase farmer's income (Sumeru, 1995). Vegetable leaf is vegetable which used its leaf and stem (Anonimus, 1990). Vegetable leaf can be grouped into two categories, commercial and non-commercial vegetable leaf. Commercial vegetable leaf is vegetable which traded with special price which only can be reached by certain society and has export chance.

Non commercial vegetable leaf is vegetable leaf with relatively lower price and preferred by middle to lower societies and less chance to be export commodity (Palungku, 2012). In the Papua land, especially in the middle mountains, there are (*Setaria palmifolia*) plants, more known as lilin vegetable (*Setaria Palmifolia*).

Based on the research result done by Mahmudresa (2010), *rosa desmestika* (Rosaceae) flower contains Nonadecane (39,79%) compound that potentially as antioxidant.

Indonesia is one state with the biggest natural capital in the world which has more than 30.000 species of high level plants. Recently, there are 7.000 species of

high-level plants. There are 7.000 species of plants used as basic material of pharmacy industry regularly.

It is about 1000 kinds of plants had been identified from the aspect of good plants systematic botany. In 2000, stated that 68% of world's population still depended on traditional treatment system that majority involved plants to cure diseases and more than 80% of world's population used herbal medicine to support their health. Those facts showed that herbal plants have important means, that is basically support the life and trade potential (Dedy, 2013).

Vegetable lilin (*setaria palmifolia*) plant is able to grow wherever because its adaptation ability is wide. Vegetable lilin (*setaria palmifolia*) plant could grow lush, rich of organic material with good drainage system. The growth of vegetable lilin needs full of sun shine, temperature of 20-30 °c, while the rain fall needed is around 1.500-1.200 mm/ year (Rooney, 1995).

The place of growing, handling of time after harvest, extraction process, storage of plants and extract simplisia also influenced the safety element toward the usage, such as the existence of metal (Pb, Cd dan As), Pesticide in the land, air and water, kinds and numbers of microorganisms, and dangerous contaminant metabolite *Aspergillus*, and anflatoksin, *Stapylococcus aureus* and *Coliform*.

The existence of water in an extract also influenced the stability of basic material; moreover the form of supply would be produced. Therefore, many analyses were done to determine the minimal content limit of water, contaminant and number of microbe. This effort called determination of non specific parameter.

METHODS

This is experiment research which done in Integrated Laboratory of Pharmacy Department of STIKES Halmahera. Research method is scientific way in order to get result with certain purpose and benefit. Types of research could be classified based on the purpose. Research method could be classified into basic research, scientific, object of researched. Based on the purpose, research method could be classified into basic research, applied research, and developing research. This research used experiment research method (Quantitative Method).

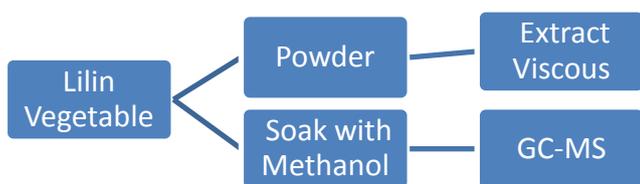


Figure 1. Experiment method is research method used to find the influence of certain treatment”.

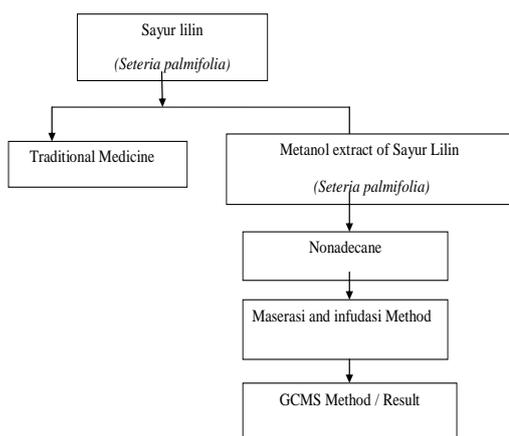


Figure 2. Research Concept Framework

EQUIPMENTS AND MATERIAL

A. EQUIPMENTS:

1. Oven
2. Spatula
3. Chemical glass
4. Bunsen
5. Erlenmeyer
6. Rotavapor
7. GC-MS tools
8. Graduated glass

B. MATERIALS:

1. Vegetable Lilin (*Setaria palmifolia*) extract
2. Methanol
3. Spirit

WORK PROCESS

a. Making of Sayur Lilin (*Setaria palmifolia*) extract

Fresh sayur lilin were taken, samples gathered from each villages were dried and then powdered. The

powder extracted by maserasi and infundasi methods. Firstly, 800 grams of sayur lilin powder done by maserasi with ethanol 70% and 90% during 3X24 hours in the different glass containers until 1-3 cm above the powder. Filtrate gathered and then evaporated with rotavapor until produced thick ethanol extract of 70% and 96%.

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

Thick methanol extract was fractionated in chemical glass, then executed with GC tool that functioned to test the purity of certain material, separated any components from compound and was able to form in identifying complex compound. Next, it followed by using MS tool that functioned to change a sample of compound into positive and negative ions and it produced from any plants.

RESULTS

This research done in Gayok Village, Malifut Sub district, North Halmahera Regency on 1-30 June 2016 in order to take basic material or sample of Lilin Vegetable (*Setaria palmifolia*) which taken in the morning.

After taking the fresh fruits, it washed and cleaned in flowing water then peeled and dried under the sun from 07.00-10.00 am during 3 days. After getting dry, it grinded by using mortar into fine powder. Then, it was done with maserasi by using methanol for about 3 X 24 hours or during 3 days.

Later, the sample was filtered and taken it's methanol extract of lilin vegetable (*Setaria palmifolia*) which was transparent, then did evaporating process that started at 3 pm.

The color of methanol extract of lilin vegetable (*Setaria palmifolia*) changed from yellow became orange, when it was boiled until it formed thick methanol extract of lilin vegetable (*setaria palmifolia*) at 6 pm.

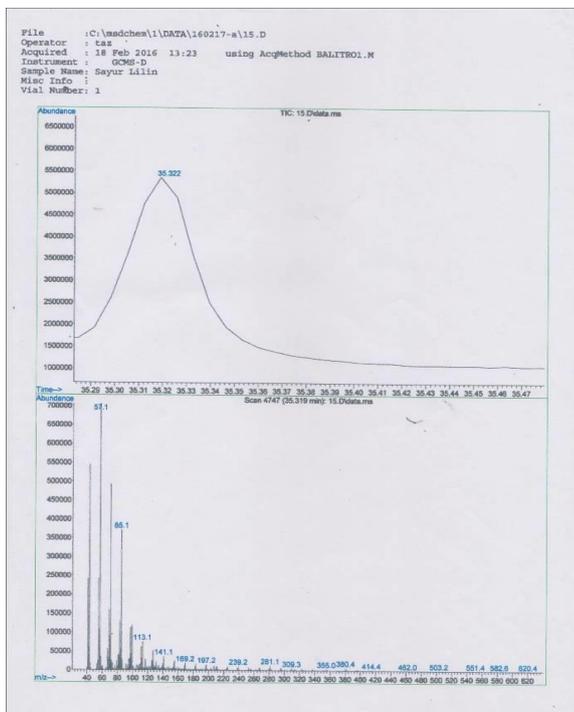


Figure 3. Result of GCMS of Lilin Vegetable

Analyzing Nonadecane Compound by using GCMS

The compound component inside of active thick extract of Nonadecane was analyzed by using Kromatografi Gas-Spektroskopi Massa/Gas Chromatography-Mass Spectroscopy (GC-MS). The result analysis of thick extract by using GC-MS showed that some of these dominant peaks were then analyzed by using mass spectrum. The result analysis of mass spectrometry from each peak then compared with database mass spectrometry so that the compounds composer of thick extract could be expected.

From GC-MS analysis, it was found that in the lilin vegetable (*Setaria palmifolia*) contained compounds of: Nonadecane of (39,79%) that potentially as antioxidant.

Table 1. GC-MS Test In Lilin Vegetable

Kind of Sample	Compound	Content %
Lilin Vegetable (Setaria Palmifolia)	Heneicosane	1,95
	Triacosane	19,05
	Tetracosane	2,03
	Docasanne	8,54
	z-12pentacosane	6,04
	Nonadecane	7,31
	Nonadecyltrifluoroacetate	30,76
	Celidonioldeoxy	2,51
	Triacetylacetate	12,26
	z-14	6,74

DISCUSSION

Plants of lilin vegetable (*Setaria palmifolia*) categorized into non-commercial vegetable and only made or used as vegetable plant that was able to be consumed by local society. Based on the information from generation to generation, known that beside used as foodstuff, this plant also used by the local society to be consumed by mothers giving birth.

Lilin vegetable (*Setaria palmifolia*), usually used as foodstuff or vegetables, contained Nonadecane compound (C₁₉H₄₀) consisted in lilin vegetable (*Setaria palmifolia*) extract.

Compound is composed of some elements formed from some chemical reactions of compounds that had different characteristic with it's composers. For example, 2 hydrogen atoms and 1 oxygen atom could be gathered into water molecule (H₂O).

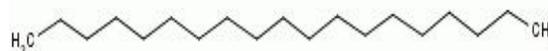


Figure 4. Nonadecane has molecule formula of C₁₉H₄₀ functioned as antioxidant.

Figure Process of Making Lilin Vegetable Extract



Figure 5. Taking of Lilin Vegetable



Figure 6. Lilin Vegetable (*Setaria palmifolia*) Refined and | Must be Dried



Figure 10. Thick Extract of Lilin Vegetable



Figure 7. Refine Powder of Lilin Vegetable (*Setaria palmifolia*) and had been soaked with methanol.

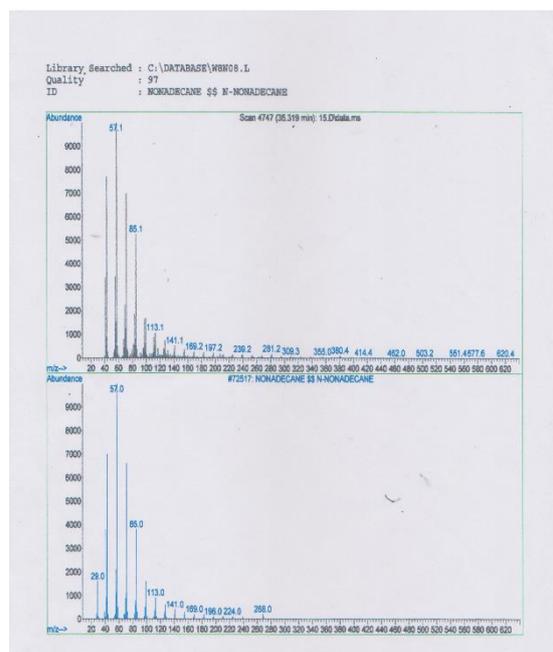


Figure 11. GC-MS Result of Nonadecane Compound in Lilin vegetable

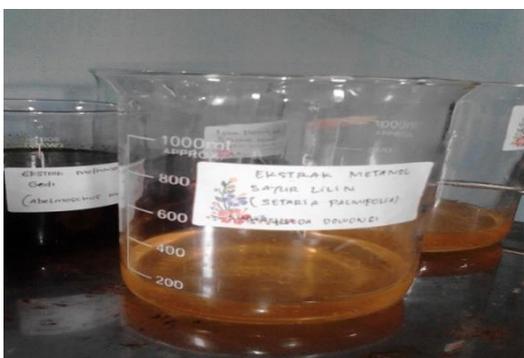


Figure 8. Methanol Extract Which had been Separated from Refine Powder

CONCLUSION

Plants of lilin vegetable (*Setaria palmifolia*) categorized into non-commercial vegetable and only made or used as vegetable plant that was able to be consumed by local society. Based on the information from generation to generation, known that beside used as foodstuff, this plant also used by the local society as “medicine” of natural Family Planning/Keluarga Berencana (KB). (Azis, 2011).

Analysis result by using Gas Chromatography Mass Spectrometer (GC-MS) determined that lilin vegetable (*Setaria palmifolia*) extract contained any bioactive compound, however there was only one compound used, that was Nonadecane which had medicine characteristic as antioxidant.



Figure 9. Process of Evaporating to Get Methanol Extract

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