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IDENTIFICATION OF CHEMICAL COMPOUND CONTAINED IN METHANOL EXTRACT OF BANANA STEM HALMAHERA (*Musa Paradiceae L*)

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ABSTRACT

Background: Banana (*Moses paradiciaca*) Is one type of tropical fruit that has a high enough potential. banana has become an export and import commodities in the international market of this plant originated from southeast asia which then spread widely the African and American .Tropical climates of wet, and can flourish in lowland and banana banana can also be used as a traditional medicine (temporary medicine). Among diseases that can be cured ie dental disease, diabetes mellitus, high blood pressure, obesity, and improve health microflora Intestine.It shows the chemical characteristics of banana tuber starch that is moisture content of 6.69 % ash content of 0.11 % and HCN 2.6 MG / KG. And from result of GC-MS test of banana thick extract (*musa paradisiaca L*) there are compound of Hexadecanoid acid, ethyl ester 1,31%.

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INTRODUCTION

Indonesia has plants and vegetations that are potentially as herbal medicine which are found easily. Moreover, our great-grandparents often used plants or vegetations as medicine.¹

By the growing of pharmacy industry in Indonesia about 10-14% per year, while Indonesia itself was still lack of basic material for medicine so that it must be imported from abroad. Therefore, Indonesia was still depended on the

basic material that made Indonesia became consumptive nation. Almost 96% of basic material was imported from abroad. One of strategy that must be done in order to make Indonesia became independent on basic material needed was strengthening the research.²

According to data of POM house of Republic Indonesia, number of herbal medicines that were registered until 2015 very much increasing. One cause of the increasing of herbal medicine using was low of risk potential occurred. One of plant that often used daily either for food or traditional medicine was banana plant. (*Musa sp*) was plant from South East Asia that now widely spread to the entire world included Indonesia. Almost all of area in Indonesia was suitable for the growing of banana plants.¹

Banana plants were spread from lowland to plateau, both cultivated at special area and randomly in the garden or yard. Almost all of house yard in Indonesia consisted of banana plants, this was because those plants fast producing, long time period, easily to be planted and cared.³

Banana plants were used for any human's needs. Instead the fruits, other parts of this plant such as the stem, leaves, and the heart also could be used. But, from all parts of the banana plants, the most used by the people were it's leaves and fruits. Banana fruit, instead to be eaten freshly, it could be produced to be fried banana, banana crispy chip, sale, and others. Banana leave was used as food wrapping. Banana heart (banana flower) could be cooked tumis of banana hearth or as other vegetables.⁴

From all parts of banana plants, the most rare used by people was banana stem. The using of that part of banana plant, until this time, was very much limited. One of banana stem utilization was being crispy chip, instead the banana stem also could be produced as alcohol through fermentation.⁴

Fermentation itself was process of decomposing sugar became alcohol and carbon dioxide caused by the activities of yeast cells. Because the wet banana stem contained of carbohydrate for about 11,6 g and dry banana stem contained of carbohydrate for about 66,2 g, so it could be become basic material in making vinegar through fermentation process. This could be one way to fulfill the need of vinegar that was more and more increased, where the vinegar was needed by food industry, laboratory (chemical, biology), pharmacy fabric and soon. Based on the research from Eko Prasetyo, optimum time of fermentation and concentration at fermentation of banana stem was 4 days fermentation and the ferment degree was 0.6 %. At this

research, it would be conducted optimally at any kinds of banana stems that produced concentration of optimum bio ethanol.⁵

Moreover, the banana stem could be used became flour, which was based on the knowledge that stem was polysaccharide component which could be produced as new flour source. The banana stem was rich of food fiber, according to Astawan, food fiber was rough fiber that was proven able to prevent any diseases, such as tooth diseases, *diabetes mellitus*, hypertension, obesity, and increasing the health of intestine micro flora. The chemical characteristic of banana stem flour were: water degree for about 6,69%, ashes degree for about 0,11% and HCN degree for about 2,6 mg/kg. The banana stem was the bottom part of banana stem that was protuberant forming root. According to Rosdiana, banana's stem had compositions consisted of 76% starch and 20% and tapioca flour. The nutrient contained in banana's stem was enable it to be become potential comestible.⁶

Started from that background, the researcher took the research title: "Identification of Chemical Compound Contained at Methanol Extract of Kepok Banana's Stem (*Musa paradisiaca*) by using GCMS method.

METHODS

Type of research

Type of research conducted was experiment research which would be conducted at Integrated Laboratory of Pharmacy Program of Sekolah Tinggi Ilmu Kesehatan Halmahera

Time of Research

The research would be conducted during 1 month started from June to July 2017.

Sample of Research

Sample at this research was Fresh Banana Stem Halmahera (*Musa paradisiaca* L) taken from WKO Village Central Tobelo Sub District North Halmahera Regency.

EQUIPMENTS AND MATERIAL

- Oven
- Spatula
- Chemical Glass
- Measurement Glass
- Bunsen
- Erlenmeyer
- Rotavator

- Three Port
- Aluminium foil
- Paper Filter
- Blender
- Riddle mesh 65
- GC-MS tool

- Filtrate simplisia of banana stem was evaporated above the water filter or with *rotavator* so it found the thick extract.
- Thick extract of banana stem was weighed and labeled.

MATERIALS:

- Extract of Banana Stem (*Musa paradisiaca* L)
- Methanol
- Spritus

WORK PROCESS

Making of Banana Stem extract

Steps of Making Banana Stem Extract were:

- Banana stem taken/got from the inside of fresh banana stem of 2-3 months then it washed with flow water.
- After being washed, the banana stem was sliced petty.
- Then the banana stem was dried under the sun directly (at 7-10 am)
- Simplisia of dried Banana Stem was weighed, then produced became powder by using powdered tool until becoming smooth.
- The smooth Simplisia powder of Banana Stem was sifted and weighed then put into the package and labelled.
- Simplisia powder of Banana Stem was put into maserai container and then was poured with methanol until pass the simplisia powder.
- Close the container and let it for 5 days covered from the sun with stirring everyday.
- After 5 days, riddle it and the residue was extorted.
- Simplisia residue of banana stem was added with extract sufficiently and stirred.
- The container was closed and kept during 2 days and protected from the sun.
- After two days, separated it by filtering it.

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

Thick extract of methanol was fractioned into chemical glass, then identified by using GC tool that functioned to examine the purity of certain material, or separated any components from mixture that could help in identifying complex compound. Then, it was continued with MS tool that functioned as compound changer of certain sample became positive and negative ions that resulted from plants sources (Budiadji et al., 2016).

RESULTS

Samples a hump made out of fresh yellow kepok banana (*Moses paradisiaca* L) done Villages Wosia Tobelo Sub-district in North Halmahera, from July until August. samples had been collected and then washed with water flow and cut the small small pieces and dried. Simplisia dried corns with the blender and soaked with methanol for 5 days with done stirring each day. After 5 days of being immersed and then filtered and residual soaked back with methanol for 2 days and after two days done re-filtering. Filtrat or liquid methanol filtration results with greenish black color evaporated until obtained extracting thick.

Extracting the obtained viscous greenish colored with the weight of the 10 grams. Thick extract obtained the test is done active substance in Gc-Ms, extracting samples given the pressure of helium or nitrogen so that the sample is in the form of steam before were injected into the column (Gc). From the Gc column to detector systems (MS) to separated splits into fragments. Fragments produced indicates the existence of these compounds that will appear in the appliance Gc-Ms.

Table 1. Gc-Ms Thick extract a hump made out of dry yellow kepok banana Halmahera (*Moses paradisiaca* L).

Samples	Compound	The womb (%)
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Samples	Compound	The womb (%)
	Hexadecanoic acid ethyl Esther	1.31
	Hexadecanoic acid	10,02
	(2E)-3,7,11,15-tetremethyl-2-hexadecem-1-ol	4.81
	The 3-Pyridine carboxamide, oxime, N-(2-trifluoromethylphenyl)	1.20
	9 Of Tricosene	12,10
	Squalene	18,36
	Gamma-Tocopherol	5.99
A hump made out of dry yellow kepok banana Halmahera	Vitamin E	5.00
	Geranylgeraniol	
	21H-Bilin-1(2H)-one, 3,17,18,23-tetrahydro-3,3,7,8,12,13,17,17,19-nonamethyl	2.65
	Stigmasterol	3.28
	The sitosterol beta.	3.62
	The cyclotetradecatrien 2,5,9-1-ol,2,6,10-trimethyl-13-(1-methylethenyl)-,[1S-(IR*,2E,5E,9E,13S*)]	5.03
	The-7,22 Ergosta dien-3-ol,(3.beta.,5.alpha.,22E)	3.02
	Vitamin E	3,21
	Vitamin E	2.93
	2 of 3-methyl-(3 of 2-butenyl methyl)-2-(4 of 3-methyl-pentenyl)oxetane	4.08
		3.84
		1.76

DISCUSSION

A hump made out yellow kepok banana Halmahera (*Moses paradisiaca* L) is the parts of the plant from the family *Musaceae* or tribe of the bananas pisang. In the traditional banana a hump made out many used as a wrapper food and giver of flavors and none in food processing.4 Extracting methanol a hump made out of dry yellow kepok banana Halmahera contains one of vitamins namely vitamin E with the number of 18,36%. Vitamin E is one of the eight molecules that has kromanol ring (kroman ring with one hydroxyl group alcohol) 12-side chain carbon alifatis which contains two methyl groups in the middle and more than two methyl groups at the end of the. Vitamin E is a vitamin that have antioxidant activity that can neutralise Free radicals. The intake of Vitamin E which penitents in food can prevent parkinson.15

One of the compounds are also found in Extracting a hump made out of dry yellow kepok banana Halmahera is Beta-sitosterol which is one of several Phytosterol Ester (sterol in plants) which has the same chemical structure with the structure of cholesterol.

Sitosterol is white powder such as candles and special memilikibau. Is hidrofobik Sitosterol and dissolved in alcohol. Both himself and at the same time with the same Phytosterol Ester, Beta-sitosterol can reduce the amount of cholesterol in the blood and sometimes used in treating hypercholesterolemia.

Also a hump made out of bananas rich food fibers, fiber food, coarse fibers proved to be able to prevent various diseases, including teeth disease, *diabetes mellitus*, high blood pressure, obesity and improve the health of the microflora in the intestines. show the chemical characteristics of the Pati a hump made out of bananas are the level of water by 6,69%, the level of abu 0.11 percent and concentration of HCN 2.6 mg/kg. A hump made out of bananas is the bottom of the banana stem is shaped menggembul fennel. According to Rosdiana, a hump made out of bananas have the composition that consists of 76 percent pati and 20% water. Pati resembles pati sago flour and tapioca flour. nutritional a hump made out of bananas that high enough allows a hump made out of bananas to be made as an alternative for food that potential enough.6 According To Wulandari a hump made out of

bananas contain Carbohydrate 66.2%. In 100 g ingredients, a hump made out of dry banana contains carbohydrates 66.2 g and on a hump made out of fresh banana contains carbohydrates 11.6 g. The womb khigh arbohidrat will spur the development of mikoorganisme. Carbohydrate content is high in a hump made out of bananas allows for fermented to produce vinegar. In the process of fermentation, carbohydrates will be changed into sugar by *S. cerevisiae*, sugar converted to alcohol and alcohol will be changed by *A. aceti* become acetic acid. In addition to the potential in the fermentation also potentially as bioaktivator in pengomposan.⁹

CONCLUSION

After the identification of a hump made out yellow kepok banana Halmahera and then tested with the appliance Gc-Ms it can be concluded that a hump made out yellow kepok banana Halmahera contain these compounds: Hexadecanoic acid ethyl ester 1.31%; Hexadecanoic acid 10,02%; (2E)-3,7,11,15-tetramethyl-2-hexadecem-1-ol 4.81%; 3 Pyridine-carboxamide, oxime, N-(2-trifluoromethylphenyl) 2.13%; 9-Tricosene 1.20%; Squalene 1.92%; Gamma. The Tocopherol 12,10%; Vitaimin E 18,36%; Vitamin E 5.99%; Geranylgeraniol 5.00%; 21H-Bilin-1(2H)-one, 3,17,18,23,tetrahydro-3,3,7,8,12,13,17,17,19-nonamethyl 2.65%; and contains 66% carbohydrate, as ingredients vinegar generator.

Suggestions

From the conclusion above, researchers suggested as follows:

- 1) For the Government to the fore more support and more help again in terms of adequate facilities and infrastructure in the examine the ingredients of natural medicine so that the students can improve their work.
- 2) For Educational Institutions, so that the results of this research are in addition of science for students in the broaden especially drugs.
- 3) For the community to be able to increase the knowledge about medicinal plants and can take advantage of it in the daily life of both to prevent and treat the disease that allows with natural materials.
- 4) For the next researcher, the results of this research is expected to be a reference to develop further research in order to become bicarbonate and herbal useful for broader society and can be developed to as the raw material of vinegar.

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