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## ORIGINAL ARTICLE

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CURRENT RESEARCHIDENTIFICATION AND BENEFITS OF PIPERIDINE COMPOUND IN RED STAR(*Protoreaster nodosus*)IN UPA VILLAGE, CENTRAL TOBELO SUB-DISTRICT, NORTH HALMAHERA.Florensia L. Lale<sup>1</sup>, Arend L. Mapanawang<sup>1</sup>, Ama Tualeka<sup>2</sup><sup>1</sup> High School of Health Sciences Makariwo Halmahera Foundation Medika<sup>2</sup> Mandiri Halmahera Pharmacy Study Program STIKMAH Tobelo.

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## \*Correspondence to Author:

Florensia L. Lale

## ABSTRACT

The red star (*Protoreaster nodosus*) is a species of the *Asteroidea* class and is grouped into the *Phylum Echinodermata*. Some bioactive of star stars as drugs are antibacterial, antibiotic, antiviral, antioxidant antifungi, anti-inflammatory, and immunostimulator. To identify the piperidine compound contained in the red star methanol extract (*Protoreaster nodosus*) using the GC-MS method. Is an experimental research Laboratory. The results of the analysis using the method GC-MS obtained that the Red Star (*Protoreaster nodosus*) contains piperidine compound 27.24%. Piperidine is a group of alkaloids that are used as antibiotic drugs, anti-cancer, Red Star (*Protoreaster nodosus*) this compound contains derivatives *Dipiridin*. used for the treatment of RNA viruses, such as Retroviral HIV, AIDS, Hepatitis from the Corona Family (COVID-19 Mers CoV, SARS CoV).

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## Introduction

Indonesia is one of the largest archipelago countries in the world, its strategic location and long coastline make Indonesia a paradise for much marine life.<sup>1</sup> Indonesia has a beach length of more than 81,000 km, an island of more than 17,508, and a vast coral reef ecosystem ( $\pm$  51,000 km<sup>2</sup>).<sup>2</sup> In developing countries, the majority of the population continues to use traditional medicines primarily to meet health needs. Similarly, the use of folk remedies in Asia continues to increase despite the widely available medicinal chemical entities in circulation.<sup>3</sup> The development of technology and knowledge in the world of medicine has also undergone changes and advances. Traditional medicine is considered as an ancient way of treatment is now starting to be looked at and researched the content of compounds from natural ingredients.<sup>4</sup>

One of the products of the waters that are the natural wealth of the Indonesian sea that can be used as a medicinal ingredient is star laut. The red star (*Protoreaster nodosus*) is a species of the *Asteroidea* class and is grouped into the *Phylum Echinodermata*. The *Echinodermata* phylum consists of approximately 6,000 species and all live in seawater.<sup>5</sup> Some bioactive antiviral, antitumor, antimicrobial, or cytotoxic compounds have been successfully extracted from various types of star laut. Bioactive compounds of star laut are very interesting to be studied especially related to the nature of chemical and biochemical characteristics and their utilization for the field of food and health.<sup>6</sup>

Star laut has bioactive components consisting of alkaloids, steroids, flavonoids, saponins, ninhydrin. The active compounds of star flies have been known to have antioxidant, antibacterial, anti-inflammatory, antifungi, and immunostimulator activities.<sup>5</sup>

Previous research has shown that piperidine compounds are also found in kamandrah seed oil which is predicted

as an insecticide. Piperidine compound that has been studied shows activity as a larvacide of mosquito killer *Aedes aegypti*.<sup>7</sup>

## Research Objectives

This study aims to find out if the red star (*Protoreaster nodosus*) contains piperidine compounds and what are the benefits.

## Research Methods

This type of research is experimental laboratory research. This research was conducted in the Integrated Laboratory of the D-III Pharmacy Study Program of the Makariwo Halmahera College of Health Sciences. The research was conducted in September-November 2020.

## Research Results

### Red Star Sampling (*Protoreaster nodosus*)

This research was conducted in the Integrated Laboratory of Pharmacy Study Program of Makariwo Halmahera College of Health Sciences in September-November 2020. Samples of red star laut (*Protoreaster nodosus*) were taken in Upa Village in the morning, sorted wet / separation of foreign materials then washed clean in running water and weighed and obtained a wet weight of 7.20 kg (as much as 15 stars), after being weighed Red Star (*Protoreaster nodosus*) in cooking (boiled to boil 100°C/1-2 hours) then dried for 3 days and soaked (watered) with Alcohol 70% to sterilize then heat with oven tool until completely dry and dried again for several minutes. Dry weight 2 kg, after which the distorts dry and chopped to be pureed using a smoothing tool and obtained Simplisia Red Star (*Protoreaster nodosus*) 900 grams, after which sifted using the appropriate sieve 20 mesh and obtained Fine Powder 500 grams.

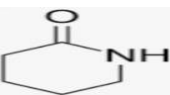
## Making Methanol Extract and Red Star Star (*Protoreaster nodosus*)

Fine powder Red starfish (*Protoreaster nodosus*) weighed 500 grams then extracted using maceration method dissolved with solvent methanol in a ratio of 500: 1 (500 grams of *Simplicia* powder sample and 1 ltr

of methanol) then filtered to separate the filtrate and residue. The residue is re-regenerated 500: 1 (500 grams of *Simplicia* powder sample and 1 ltr of methanol). The filtrate obtained evaporated (evaporated) with *Rotary Evaporator tool* to produce a condensed extract of red star (*Protoreaster nodosus*).

## Piperidine Compound Analysis on GC-MS (GasCromatografy Mass Spectrometry) )

**Table 2. Red Star Test Results (*Protoreaster nodosus*) with GC-MS (Gas Chromatography-Mass Spectrometry).**

Sample Type/code	Compound	Content %	Formula Structure
( 1 )	( 2 )	( 3 )	( 4 )
	Red Star		
	( <i>Protoreaster nodosus</i> ) Piperidine	27.24	
			
	C <sub>5</sub> H <sub>9</sub> NO		

From the results obtained that the red star(*Protoreaster nodosus*)contains piperidine compound 27.24% which was tested using GC-ms (Gas Chromatography-Mass Spectrometry)with chemical C<sub>5</sub>H<sub>9</sub>NO.

## Discussion

The sample used in this study was a red star (*Protoreaster nodosus*), this sample was taken in the morning. This fresh red starfish is indeed taken from the coral reef directly. Solvents used in the extraction process of red star laut(*Protoreaster nodosus*)are methanol solvents because methanol solvents can dissolve in polar substances, semi-polar and non-polar. Tools used to identify compounds contained in angry star laut (*Protoreaster nodosus*)that is by using (GC-MS) *Gas Chromatography-Mass Spectrometry* because the advantages of this tool analysis faster, does not damage the sample, high sensitivity to separate various compounds that mix and able to analyze various compounds even in low levels/concentrations. By using

GC-MS (Gas Chromatography-Mass Spectrometry) it is proven that the piperidine compound contained in red star laut (*Protoreaster nodosus*).

Based on the test results of a sample of red star methanol extract displayed in table 2 showed that piperidine compound levels were 27.24%. Compound piperidine or the name *Hexahydropyridine Azacyclohexane*. In laboratory testing at IPB Bogor by comparing retroviral RNA inhibition in culture media, results from the first day to 7, with photocells in the comparison between Pangiar, Golobe and Lamivudine proved significant results, where Pangiar had inhibition at 800 ppm at 94.80%. While Golobe at 800 ppm, 43.35%, Lamivudine at 100 ppm at 46,37%.

Based on previous research compounds that will be examined there are also in the results of previous research that has been found among others that Golobe (*Zingiberaceae*)43% and Pangi leaves (*Pangium edule* reinw) reached 94.80% able to inhibit retrovirus

lamivudine.<sup>11th</sup> The analog compound curcumin 3,5-bis-(4-hydroxy-3-metoksi-benzylidene) piperidines-4-on monohydrate hydrochloride can be synthesized through aldol condensation using vanillin and piperidine 4-on hydrochloride monohydrate with HCl catalyst. The optimal pH of the formation of 3,5-bis-(4-hydroxy-3-metoksi-benzylidene) piperidine-4-on hydrochloride monohydrate is pH2.<sup>22</sup>

Previous research has shown that piperidine compounds are also found in kamandrah seed oil which is predicted as an insecticide. Piperidine compound that has been studied shows activity as larvacide of mosquito killer *Aedes aegypti*.<sup>7</sup> Another piperidine compound, piperonaline, has been successfully extracted from the piper longum plant and reportedly shows the activity as larvacide of *Aedes aegypti*. The results of the analysis of castor oil fence using GC-MS showed that the active compound suspected to be larvacide *Aedes aegypti* is piperine which is an alkaloid piperidine group.<sup>23</sup>

Star laut has been widely studied and it is known the activity of star laut as a drug that is antibacterial, antiviral, antioxidant antifungi, anti-inflammatory, and immunostimulator.<sup>5</sup>

This study illustrates that Piperidine has good activity in inhibiting RNA viruses, such as HIV / AIDS, inhibiting the enzyme stage Transcriptase. Piperidine chemical formula has the capability in the case of Mers Corona Virus, SARS, and COVID-19. Further research is needed

on the benefits-based Herbal piperidine to deal with cases of RNA virus, a retrovirus.<sup>11</sup>

## Conclusion

It can be concluded that the results of the analysis of piperidine compound with a concentration of 27.24% contained in the red star (*Protoreaster nodosus*) as a drug case of Mers Corona Virus, SARS, and COVID-19.

## Advice

Based on the results of the study, the authors presented several suggestions:

### 1. Theoretical

This research hopefully can add to the science of red star laut as a medicinal ingredient.

### 2. Practical

It is expected that the public can know the benefits and functions of the red star (*Protoreaster nodosus*) is a source of herbal medicine.

### 3. Institutions

I hope in the future hopefully this research can be a reference in developing further research about the Red Star (*Protoreaster nodosus*) for institutions, and other students who will conduct research. Because there are still many people who do not know the benefits and functions of the Red Star (*Protoreaster nodosus*).

## BIBLIOGRAPHY

1. Delpris P, et al. Potential Antibacterial Star Laut From The Coastal Waters of Tongkaina Manado Village. Journal of Coastal and Tropical Seas. 2019;7(3)168-173.
2. Arend. Mapanawang, at all. The Invention Of Chemical Compounds Of Herbal Medicine Containing Pyridine For Corona Virus (Covid – 19, Mers), HIV/AIDS, And Hepatitis. International Journal of Health Medicine and Current Research. 2020 : 5 (01) : pp.1565-1571. DOI: 10.22301/IJHMCR.2528-3189.1565.
3. Ahmad Haris Al Farizi. Diversity of Asteroidea (Star Star) on Mandangin Sampang Madura Island. Thesis. 2019 ; 1;2.
4. Apri A, et al. Profile of Kangean Island Coral Reef, Sumenep Regency, Indonesia. Scientific Journal of Fisheries and Marine Affairs. 2018;10(2):76-83.
5. Arend L, Mapanawang, at all . The Identification of Chemical Compounds Contained in The Methanol Extract Grain Halmahera (*Setaria italica beauv*). IJHMCR. 2018;3 (02) . pp.939-942. DOI: 10.22301 / IJHMCR.2528-3189.939.

6. Mapanawang A, L. Research in the Field of Health Tobelo: Yayasan Medika Mandiri. 2016.
7. Indria Hafizah, Sulastrianah. Taste Test Ethanol Extract Horned Starg (*Protoreaster nodosus*) against *Bacteria Streptococcus sp.* and *Candida albicans*. Medula Journal. 2015;3(1)192-200. E-ISSN 2443-0218.
8. Noor Roufiq Ahmadi, et al. Optimization Process Of Extrasi Kamandrah Seeds (*Croton tiglium L*) By Packing and Identifying the Content of Active Ingredients As Vegetable Larvacides Pencegah Dengue Hemorrhagic Fever Disease. Journal of Optimization of kamandrah seed extraction process. 2008: 21 (3) ;154-162.
9. Muhammad Da'I, et al. Synthesis of Curcumin Analog Compounds 3.5 Bis-(4'-Hydroxy-3'-Metoksi Benzilidin)-Piperidin 4 -On (Hydrochloride Monohydrate) With Catalyst HCl. Indonesian Journal of Pharmacy Faculty of Pharmacy, Muhammadiyah University surakarta. 2016;11(1)33-38. ISSN 1411-4283.
10. Adi Riyadhi. Identification of Jatropha Curcas Fence Distance Oil Active Compounds As Vegetable Larvacides Vector Dengue Hemorrhagic Fever. Journal. 2017;79-80.71-80.

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