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**ORIGINAL ARTICLE**  
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CURRENT RESEARCH**

**THE EFFECT OF CONSUMPTION OF WORM LAOR  
(POLYCHAETA) ON REDUCING HIGH BLOOD PRESSURE  
IN PATIENTS WITH HYPERTENSION IN THE WORK AREA  
OF KUSURI THE HEALTH CENTER IN THE  
WEST TOBELO DISTRICT, NORTH HALMAHERA**

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## ABSTRACT

Known as hypertension or high blood pressure is a condition where an increase in blood pressure above the normal threshold is 120/80 mmHg. Laor is a Polychaeta organism that rises to the surface of the sea to breed. Research purposes to see the effect of the consumption of Laor Worms (Polychaeta) on Reducing High Blood Pressure in Patients with Hypertension in the Work Area of the health centers in the West Tobelo District, North Halmahera Regency

This type of research is a research "quasy experimental design with pre-post test control group". With a large sample of 20 respondents in the Work Area of the Public Health Center in Kikut District, West Tobelo, North Halmahera Regency by means of non-probability sampling, the type of saturated sampling.

Based on the results of statistical tests (SPSS) Obtained a significant value =  $0.000 > 0.05$ , or the calculated T value  $(9,000) > T$  table  $(2,776)$ , the test results of the statistical analysis (SPSS) Showed that the Laor worm capsule extract to Decrease blood pressure by therefore in the experimental group  $H_0$  was rejected and  $H_a$  was accepted (where  $\text{sig} > 0.05$ ). While in the control group the value of  $\text{sig} = 0.213$  is Obtained so that it has been proven that  $H_0$  is

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accepted Because of the value of  $\text{sig} > 0.05$ . Laor worm capsule Effectively extract can reduce blood pressure in people with hypertension. Apart from controlling blood pressure, hypertension sufferers make-Laor can extract as herbal medicine that can reduce high blood pressure.

## INTRODUCTION

Based on data from the World Health Organization (WHO) estimated hypertensive patients around the world amounted to 600 million people, the WHO states that cardiovascular disease is the world's leading cause of death in the population aged 65 years and older with more number of deaths in developing countries. Hypertension is often found in the elderly. An estimated 23% of women and 14% of men over the age of 65 years suffer from hypertension. The prevalence of hypertension in the world is estimated at about 15-20%. Hypertension is more common in the age group 55-64 with 3 million deaths each year. (2)

Indonesia Survey 2014 in the number of cases of hypertension, there were 19 874 cases and the number of deaths due to hypertension as many as 955 cases (4.81%) and increased in 2014 to 22 216 cases and the number of deaths due to hypertension as many as 1,122 cases (5.05%). ( 5) Riskesdas 2017 shows that hypertension is a major health problem with a high prevalence, ie 25.8%.

Profile of Maluku province north year the number of cases of hypertension recorded at 75.3%. (7) Office northern Halmahera hypertensive by 2016, as many as 871 hypertensive women with a percentage of 1.94%, male hypertensive patients as many as 658 people with hypertension with a percentage of 1.41% of the total of women to men in 1529 with a percentage of hypertensive patients 1.67% and in 2017 as many as 871 hypertensive women with a percentage of 54.71%, male hypertensive patients as many as 658 people with hypertension with a percentage of 49.10% of the total of women with men with hypertension in 1529 with a percentage of 52.15%. and in 2018 as many as 1,893 patients with hypertension. ((9)

The preliminary data from the clinic kusuri get hypertensive patients in 2016 the number of 52 patients with hypertension with a percentage of 2.10%. Patients with hypertension in 2017 the number of 52 patients with hypertension with a percentage of 14.05%. Preliminary data in 2019 from January to February by 20 people with hypertension. (9)

Background Based on the above, researchers are interested in conducting research on Influence

Consumption Esktrac Laor worms (Polychaeta) Decline Against High Blood Pressure In Patients with Hypertension In Puskesmas Kusuri Western District of North Halmahera Tobelo.

## Formulation of the problem

Is there any Influence Consumption Esktrac Laor worms (Polychaeta) Decline Against High Blood Pressure In Patients with Hypertension In Puskesmas Kusuri Western District of North Halmahera Tobelo.

## Research purposes

### General purpose

To see Influence Consumption Esktrac Laor worms (Polychaeta) Decline Against High Blood Pressure In Patients with Hypertension In Puskesmas Kusuri Western District of North Halmahera Tobelo.

### Special purpose

- a. Knowing the characteristics of the distribution of the respondents in the clinicKusuri Western District of North Halmahera Tobelo.
- b. Find and decipher Influence of Consumption Esktrac Laor worms (Polychaeta) Decline Against High Blood Pressure In Patients with Hypertension

## Benefits of research

### for researchers

As a means to increase knowledge and insight Influence of Consumption EsktracLaor worms (Polychaeta) Decline Against High Blood Pressure In Patients with Hypertension In Puskesmas Kusuri Western District of North Halmahera Tobelo.

### For Educational Institutions

- a. Provide additional scientific knowledge and literature at the College of Health Sciences makariwo (STIKMAH) Halmahera on the Influence of Consumption EsktracLaor worms (Polychaeta) Decline Against High Blood Pressure In Patients with Hypertension In Puskesmas Kusuri Western District of North Halmahera Tobelo.
- b. Such information can be used as a comparison for conducting advanced research for students and lecturers.

## For Further Research

As the material/resource for other researchers who have the same interest in order to develop further

and can be used as a comparison for the interested to continue similar research.

## Literature review

### Hypertension

#### Understanding Hypertension

Hypertension or high blood pressure disease is a vascular disorder that resulted in the supply of oxygen and nutrients carried by the blood, obstructed to body tissues that need. Hypertension is often referred to as the assassin / cold-blooded killer (the silent killer) because it is a deadly disease without being accompanied by symptoms first as a memorial for the victims. Hypertension is systolic blood pressure greater than 140 mmHg and diastolic blood pressure over 90 mmHg, Hypertension is a condition where the blood pressure to rise and remained at this pressure despite being relaxed.

#### Epidemiology

Hypertension is an increase in blood pressure are on the target symptoms that persist for an organ, such as a stroke to the brain, coronary heart disease to heart and blood vessels to the heart muscle.

#### pathophysiology

The mechanism of hypertension is through the formation of angiotensin II of angiotensin I by Angiotensin I Converting Enzyme (ACE). ACE holds an important physiological role in regulating blood pressure. Blood contains angiotensinogen produced in the liver. Furthermore, by hormones, renin (produced by the kidneys) is converted into angiotensin I. by the ACE contained in the lungs, angiotensin I changed widened angiotensin II. Angiotensin II has a key role in raising blood pressure through two main actions. The first action is to increase the secretion of antidiuretic hormone (ADH) and thirst. ADH is produced in the hypothalamus (pituitary gland) and acts on the kidneys to regulate urine osmolality and volume. Increased ADH, very small amounts of urine excreted out of the body (antidiuresis)

High blood pressure classification as follows: (15)

- a. Normal blood pressure, that is, if the systolic less than or equal to 140 and diastolic less than or equal to 90 mmHg.
- b. Borderline blood pressure, certain systolic and diastolic 141-149 91- 94 mmHg. High blood pressure or hypertension, that is, if the systolic greater than or equal to 160 mmHg and diastolic greater than or equal to 95 mmHg. 3

### Hypertension Risk Factors

Risk factors are factors or circumstances affecting the development of a disease or health status. The term influence here implies pose a greater risk to the individual or society for the spread of a disease or the occurrence of certain health statuses.

a. Hypertension risk factors can not be changed

1) Age

He's someone who is at risk of suffering from hypertension are aged over 45 years. As a degenerative process, hypertension naturally found only in adult classes Found trend of the increasing prevalence of level age and usually at the age of > 40 years. Age affects the occurrence of hypertension.

2) Gender

Data in the US showed that up to 45 years of age blood pressure of men is slightly higher than women, between the ages of 45 years to 55 years of pressure ences between men and women is relatively the same, and after the age of the women's blood pressure increased much than men , This is likely due to hormonal influences.

3) Heredity (genetic)

Someone will have a greater chance to get hypertension if their parents are hypertensive. At 70-80 cases of essential hypertension also obtained a history of hypertension on their parents 13. The presence of certain genetic factors on the family will cause the family was at risk of suffering from hypertension.

4) Ethnic

Hypertension is more common in blacks than in white-skinned people. Until now, the exact cause is not known. However, blacks found lower renin levels and a greater sensitivity to vasopressin. (17)

b. Hypertension risk factors that can be modified

1) Smoking

Substances toxic chemicals like nicotine and carbon monoxide in cigarettes to spur spending hormone adrenaline that can stimulate increased heart rate and CO have a stronger ability than red blood cells (hemoglobin) in terms of attracting or absorb O<sub>2</sub>, thereby reducing the capacity of red blood to carry O<sub>2</sub> to tissues including the heart, to meet the needs of O<sub>2</sub> on the network it is necessary to increase the production of hemoglobin in the blood in order to bind O<sub>2</sub> more for cell survival.

2) Overweight

Bodyweight is a determinant factor in blood pressure in the majority of an ethnic group of all ages. According to the National Institutes for Health USA (NIH, 1998), the prevalence of high blood pressure in people with a Body Mass Index (BMI) > 30 (obese) is 38% for men and 32% for women, compared with a

prevalence of 18% for men and 17 % for women those who have a BMI <25 (normal nutritional status according to international standards). 32perubahan physiological may explain the association between excess weight in blood pressure, the risk of insulin resistance and hyperinsulinemia, activation of the sympathetic and renin-angiotensin system, and physical changes in the kidneys.

### 3) Stress

The relationship between stress and hypertension is suspected of sympathetic nerves which can increase blood pressure intermittently. If prolonged stress can lead to persistent elevation of blood pressure.

### 4) Factor Salt Intake (Sodium)

Limiting consumption of salt up to 6 grams a day (equivalent to 2400 mg of sodium). Salt consumption has a direct effect on blood pressure. It has been shown that an increase in blood pressure when getting older, which happens to all the people of the city, is the result of the amount of salt in the meal.

### 6) Factors Carbohydrate and Fat Consumption of Hypertension

Carbohydrates serve as an energy source, the material forming the various compounds of the body, the material forming the essential amino acid, normal metabolism of fat, saving protein, enhance the growth of intestinal bacteria, maintain bowel movements, increase the consumption of protein, minerals and vitamins 15 Hyperlipidemia is a state of increased blood lipid levels in lipoprotein (cholesterol and triglycerides). This is related to the intake of fats and carbohydrates in excessive amounts in the body .. (18)

### Complications of Hypertension (19)

#### a. Arteriosclerosis

People suffering from hypertension are likely to suffer arteriosclerosis. Arteriosclerosis is a disease in which the blood vessel walls become thicker inner layers of fatty deposits called plaque or hard deposits that are not normal to the artery wall.

#### b. Heart disease

The blockage of the blood vessels can lead to heart failure. This happens because in people with hypertension will increase the work the heart, the heart muscle will adjust so that the swelling of the heart and the longer the heart muscle relaxes and reduced elasticity.

#### c. Kidney illness

High blood pressure can cause blood vessels in the kidneys contracted so that the flow of nutrients to the kidneys is disrupted and cause damage to kidney cells. If this happens constantly then kidney cells can not function anymore. If not addressed, it will cause severe

damage to the kidneys known as terminal renal failure. (19)

### Dietary Management of Patients with Hypertension

Diet is one way to treat hypertension without serious side effects, for a more natural control method, when compared to the blood pressure-lowering drugs that can make patients become so dependent on the drug. (20)

#### a. Low-Salt Diet

The low-salt diet aims to help remove salt or water retention in the tissues of the body and lowering blood pressure in patients' hipertensi1. A low-salt diet can affect blood pressure in patients with hypertension. Table salt contains sodium your body needs to perform the functions of the body. Sodium regulates blood volume, blood pressure, moisture content, and function of cells.

Low Salt Diet kinds, namely:

##### 1) Low Salt Diet I (200-400 mg)

This diet is given to patients with edema, ascites, and severe hypertension. In the food processing no added salt, avoid foods high in sodium. (20)

##### 2) Low Salt Diet II (600-800 mg)

This applies to the patient's diet edema, ascites, and hypertension are not too heavy. In the food processing may use ½ teaspoon of salt (2 g). (20)

##### 3) Low Salt Diet III (1000-1200 mg Na)

This diet is given to patients with edema or mild hypertension. In eat, processing must use salt 1 teaspoon (6 grams) of salt (Almatsier, 2005) The source of sodium is salt, monosodium glutamate (MSG), soy sauce, and foods preserved with salt.

#### c. Low Energy and Fat Diet

Diets low in energy and fat is the dietary energy and fat content below normal requirements, sufficient vitamins, and minerals, as well as much fiber, which is beneficial for weight loss. This diet aimed at weight loss done gradually by considering food habits in terms of quality and quantity.

#### Consumption Pattern

Food consumption patterns or eating habits are a variety of information that can provide information that can give you an idea of the amount, type, and frequency of food eaten each day by someone and it is typical for a particular group of people.

A diet consisting of:

##### a. frequency of eating

Frequency of eating is the number of daily meals in both qualitative and quantitative are processed foods naturally in the body through the digestive tools ranging from the mouth to the small intestine. Old food in the stomach depends on the nature and type of food. If

averaged, generally empty stomach between 3-4 hours. (21)

**b. type of food**

The type of food is a variation of foodstuffs that when eaten, digested and absorbed will produce the least healthy and balanced menu tree. (21)

**consumption**

Understanding the level of consumption is the quality and quantity of the dishes. The quality of the dishes showed all the nutrients the body needs in the arrangement of dishes and comparison of one over the other.

**Factors affecting consumption**

These factors are economic constraints, chronic diseases, psychological influences, errors in diet, lack of knowledge about nutrition and processing method, and decreased energy. (21)

Guidelines for choosing healthy foods, namely:

- a. The food was varied and nutritionally adequate.
- b. Foods that are easy to chew and digest.
- c. Berkualitas protein such as milk, eggs, meat, and fish.
- d. Sources of carbohydrates such as bread, meat, and green vegetables.
- e. Foods containing vegetable fats and reduce food containing animal fats.
- f. Foods that contain iron such as beans, spinach, green vegetables, and calcium-containing foods such as fish or vegetables.
- g. Limit foods that are preserved.
- h. Drink 6-8 glasses of water a day because of increased water needs as well as to expedite the process of metabolism.

**Worms concept Laor (Polychaeta)**

**Definition Laor worms (Polychaeta)**

One Polychaeta worms that have the breeding pattern is that in Maluku Palolo worms known as worm Laor. stated that Laor is Polychaeta organisms that rises to the surface to carry out developments multiply. Laor consumed by the people of Maluku actually posterior Polychaeta organisms that contain egg and sperm. How different Laor breeding with other animals, in the process of both male and female mating release the posterior part of the anterior.

Polychaeta belongs to the phylum Annelida. Filum annelids or segmented worms are commonly called, have a very high number of species, which is about 75,000 species. The annelid phylum is divided into three classes, Oligochaeta (earthworms Group), Hirudinea (Group leech), and Polychaeta (marine worms). The word comes from the Greek Polychaeta, namely poly meaning many, and chaeta which means setae or Polychaeta has 8,000 species spread across the world.

**Types of Laor worms (Polychaeta)**

- a. Eunice Viridis (Palolo worm) as a food ingredient (Containing High Protein)
- b. Lidice Oela (flukes Wawo) as a food ingredient (Containing High Protein)
- c. Neries Domerlili, Nereis Virens, Neanthes Virens (Sea Water Worm)
- d. Arenicola sp.

**Classification Laor worms (Polychaeta)**

**Table 1.** Klasifikasi Polychaeta

Kingdom	Animalia
phylum	annelid
Class	Polychaeta
The Order	Eunicida
Familia	Culicidae
genus	Eunice
Species	Eunice Viridis

**Nutritional content Laor worms (Polychaeta)**

Polychaeta in protein and amino acids that quality as well as unsaturated fatty acids. Polychaeta protein content was 56.29% and 11.32% fat, while the fatty acid content includes iokosapentanoat acid (EPA), dokosaheksanoat acid (DHA), arachidonate acid (ARA), stearic acid (SA), linoleic acid (LA ) and linoleic acid (LNA). (22)

**The content of Compound Laor (Polychaeta)**

According to the results of Laboratory tests in Laor asking that there are several compounds that are beneficial to the human body are: (22)

**Table 2.** Kandungan Compounds Laor.

NO	fatty Acid	%	Mg / ml
1	lauric Acid	2,042	.435
2	Myristic Acid	3.388	0.722

NO	fatty Acid	%	Mg / ml
3	Myristoleic Acid	.130	0,028
4	Palmitic Acid	25.645	5.468
5	Paimitoleic Acid	2,148	.458
6	stearic acid	14.017	2,989
7	oleic Acid	11.655	2,485
8	linoleic Acid	2,557	.545
9	Y-Linolenic Acid	0,400	0,085
10	linolenic Acid	2.356	0.502
11	11.14 cis-Elcosadienoic	4.056	0.865
12	Cis-Elcosatrienoic -8,11,14	9.956	2,123
13	behenic acid	.654	.140
14	Erucic Acid	12.891	2,749
15	Nervonic Acid	1,299	0.277
16	FIG	0.481	0.102
17	EPA	3.866	0.824
18	DHA	2.458	0.524
19	medium-chain	5.560	1.185
20	saturates	40.316	8.596
21	Monoenes	18.968	4.044
22	n-6	29.861	6.367
23	n-3	5.294	1,129
24	mg	2,132	
25	mg / ml	21.321	

**100 uL aliquots ug IS-100 (1 mg / mL)**

**Compounds Oleic Acid (Omega 9) (22)**

Oleic acid (oleic acid) is a monounsaturated fatty acid found naturally in many plant sources and in hewani.Ini product is a fatty acid omega 9, and considered one of the sources of healthy fats in the diet is commonly used as a substitute for animal fat source that high in saturated fat.

IUPAC name: Oleic Acid

Another name: Oleic Acid

Chemical formula: C18H24O2

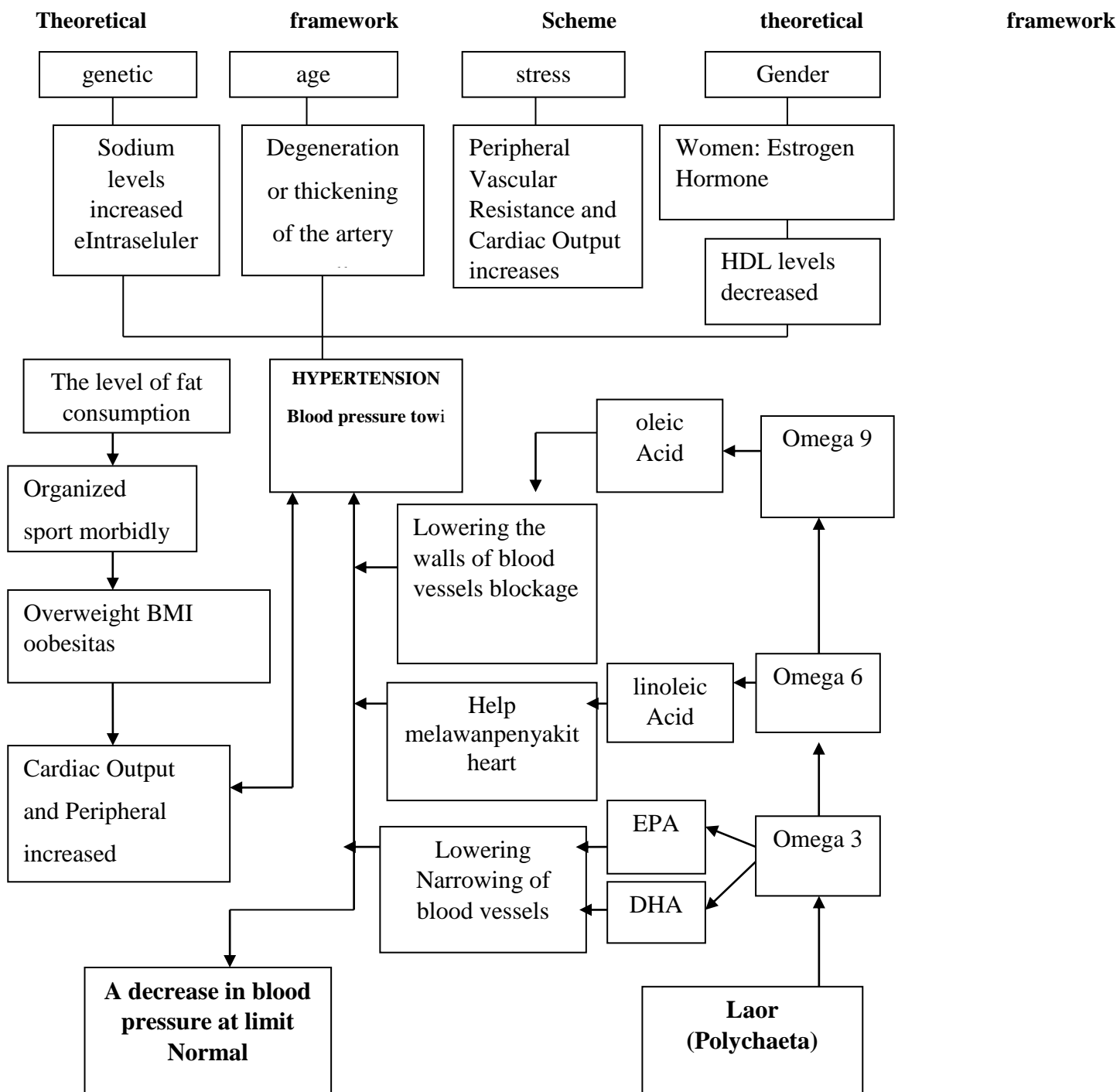
Polychaeta Oleic Acid Compounds associated with hypertension and is as follows:

**Omega 6**

Omega 6 fatty acids polyunsaturated have the first double bond at the 6th position. Physical properties and chemical properties, metabolism, digestion, and absorption and secretion of fat equals. Omega 6 fatty acids, including one of the essential fatty essential. Asam actually consists of linoleic acid (AL) "linoleic acid" (LA), linolenic acid (ALN) "linolenic acid" (ALA).

**Omega 3**

Omega-3 fatty acids are highly unsaturated and are liquid at temperatures.Asam is very easily oxidized fat due to the number of double bonds that much that omega-3 fatty acids are not stable. The fatty acids including omega-3 fatty acid series are eicosapentaenoic (EPA) and docosahexaenoic (DHA). (22)



Source: sabi Bela 2018, Nora L. Sondakh 2016, Nova M. Wulur 2016

### Conceptual framework

The conceptual framework of this research sees Influence Consumption Esktrac *Laor worms (Polychaeta)* to Decrease High Blood Pressure In Patients with Hypertension In Puskesmas Kusuri Western District of North Halmahera Tobelo. Independent variables (independent variables) is a worm Estrace Consuming Laor, while the Dependent variable (dependent variable) Patients with Hypertension. (22)

### Operational definition

Operational definitions are the variables that are intended to understand the meaning of each study prior to analysis.

**Table 3.** Operational definitions and variables of the study.

No.	Research variable	Research definitions	How to measure	Measuring instrument	measuring scale	Results of measuring
1	Variabelindependen EsktracLaor worms (Polychaeta )	Polychaeta is an organism that rises to the surface to carry out developments multiply. Laor consumed by the people of Maluku actually posterior Polychaeta organisms that contain egg and sperm	Consume 1 capsule of 250 mg EsktracLaor worms (Polychaeta) Every night			
2	Dependent variables Decreased blood pressure	Body Response Against Demands that faced a decrease in blood pressure	Measurement directly (Measured in 3 weeks)	Test Equipment mercury blood pressure meter	ordinal	Score 1 = Optimal: 140/90 mmHg -150 / 100 mmHg Score 2 = Threshold: 160/110 mmHg- 170/120 mmHg Score 3 = high: > 180/120 mmHg

**METHODS**

**Research design**

This type of research used in this research is quantitative research that the type of research that produces findings that can be achieved (obtained) by using statistical procedures or other means of quantification. (23) Where the researcher seeks mencariadanyaInfluence Consumption Esktrac Laor worms (Polychaeta ) Decline Against High Blood Pressure In Patients with Hypertension the research design queasy Experiment Design Control Group, there are two groups in this study is the experimental group and the control group, each group selected at random or random by using pre-test and post design testControl group. (23)

Both groups previously performed pre-test first and only then given treatment experimental group that received treatment, while the control group was given no treatment. After that, the two groups were post-test again, the purpose of this study to see the difference in the results of both groups and seek their influenceEsktracLaor worms (Polychaeta ) against a given treatment group. (23)

The study design is described as follows:

**Table 4.** DesainPenelitian

Group	pre-test	treatment	Post-test
Experiment	O1	X	O3
Control	O2	-	O4

Information :

O1 = Result before taking any blood pressure measurement extra Laor worms in the experimental group.

O2 = Results of measurement of blood pressure in the control group.

X = Intervention Award worm extract Laor

O3 = blood pressure measurement results after taking extra worm experiment Laor in the intervention group.

O4 = Results of measurement of blood pressure in the control group.

**Place and time of research**

Research Sites



This research will place in the Village Kusuri Western District of North Halmahera Tobelo.

#### Research time

This research conducted during one month, starting from the month of March-April 2019.

### Methods Data Collectors

#### Data collection technique

#### Primary data

##### a) Interview (Interview)

Researchers conducted interviews directly with the respondents to obtain data that can support this research.

##### b) Observation (Observation)

Observations in the preparation of this report are done by observing and recording directly on the object of study so that the data obtained from the research can be used as a comparison to the one delivered from the respondents.

#### Secondary Data

Secondary data were obtained from theory books, journals and studies related to this research project, as well as data obtained from health Kusuri Western District of North Halmahera Tobelo

### Data Collection Procedures

Research data collection procedure is as follows: (24)

#### Administrative procedures

1. Data collection was conducted after obtaining permission from the Head of Puskesmas Kusuri Western District of North Halmahera Tobelo. (License attached).
2. To disseminate the research plan Puskesmas head Kusuri Western District of North Halmahera Tobelo, and people who suffer from high blood pressure in the study. Researchers explain the purpose of the research, as well as the benefits of the research procedure, then discussed consuming techniques EsktracLaor worms (Polychaeta ) in patients undergoing interventional procedures to decrease high blood pressure.
3. Researchers determine which patients will do the intervention of high blood pressure.
4. Researchers gave information about the purpose and procedures of the research conducted and then ask the patient to be a responder study by signing an informed consent sheet.

5. Doing the selection of respondents in accordance with the inclusion criteria.
6. Respondents were grouped into two groups: the first is an intervention group that received standard action by administration EsktracLaor worms (Polychaeta ) whereas the second group are those which are standard measures without giving EsktracLaor worms (Polychaeta ), Intervention procedures.

#### The intervention group

- 1) Researchers ensure respondents interventional procedures to be performed high blood pressure. and introduce themselves to the respondent.
- 2) Researchers briefed the respondents about the meaning, purpose, manner, the benefits of water boiled banana leaves dry shoes for the respondent and time of execution, the procedure for awarding EsktracLaor worms (Polychaeta ),
- 3) Provide an opportunity to the respondent to ask questions and give informed consent, ask for a signature as proof of consent for respondents willing to participate in research activities.

#### The control group

Patients in the control group examination blood pressure without consuming as much as 2 times EsktracLaor worms (Polychaeta ),

### Data analysis

#### Univariate analysis

Univariate analysis serves to summarize a collection of measurement data such that the data set is transformed into useful information, and processing of data, only one variable analysis Univariate in this study is the characteristics of respondents age, gender, age data with the display data such as mean, median, mode, and standard deviation, whereas categorical data to see data in the form of frequency and percentage.

#### Bivariate analysis

The bivariate analysis serves to determine the relationship between variables

The tests used are:

##### a. test T

Doing a bivariate analysis for categorical independent variable manifold pairs. Measurement of pre-test and post-test control group, measurements before and after EsktracLaor worms (Polychaeta) (Intervention group). This test was conducted to identify the effect of consumption EsktracLaor worms (Polychaeta) on the decline in high blood pressure. by

comparing the values before and after treatment. Significance of test results determined based on the value of the T arithmetic test and T-test table  $< 0.05$ .

## DISCUSSION

The results obtained from 20 respondents, the highest number of respondents were age  $> 56$  years 17 respondents (85.0%). According to researchers one factor affecting the increase in blood pressure is a factor of age, where the age of over 45 years. As a degenerative process, hypertension naturally found only in adult classes because of the trend of increased prevalence of level age and usually at age  $> 40$  years.

Respondents by Gender, women more than men, with women (70%) and the males only (30%). According to researchers why women are more often affected by the disease because hypertension may be exacerbated by the influence of hormones. At age  $> 45$  years, women are more prone to arteriosclerosis, because one of the properties of estrogen is to resist salt, in addition to the hormone estrogen also cause a buildup of fat that support the occurrence of arteriosclerosis, which causes an increase in blood pressure.

The results based education that most respondents with a background in elementary education 17 respondents (85%), according to researcher education is an important part of human life because a good education will better the insight and knowledge of people so that they can make it easier for people to access the media health.

The results based on the work that the majority of the 20 respondents who are still working as much as 16 respondents (80%). according to researchers work plays an important role in human life because the good work will earn a good income so that will add to the degree of the person's life.

Results of statistical test analysis (SPSS) was obtained significant value = 0.000  $< 0.05$  or the value of T count (9000)  $> T$  table (2776), shows that consumption EsktracLaor worms (Polychaeta) have an influence on the reduction of blood pressure in patients with hypertension, at sub-district Puskesmas kusuri western North Halmahera Tobelo.

### The experimental group (Pre-Test and Post-Test)

1. Decision-making is based on a comparison of the value of T calculated and T table.
  - a. If T is bigger than T table then  $H_0$  is rejected
  - b. If T count is smaller than T table then  $H_0$  accepted

T Unknown count is 9,000), while the T table sought it

- a. 5% significance level to test two sides then significant levels divided into 2.5%
- b. Df (degree of freedom) or the degree of freedom of the amount of data searched by the formula  $-1$  or  $5-1 = 4$
- c. Tests were carried out 2 sides with a value of df = 4 and the significant value of t table 0.05 then the obtained value of 2,776.

Therefore T count is subject  $H_0$  is rejected, it can be concluded that blood pressure before and after consuming Consumption EsktracLaor worms (Polychaeta) is not the same or significantly different.

2. Decision-making is based on a probability value
  - a. If the probability  $> 0.05$ , then  $H_0$  is accepted
  - b. If the probability of  $< 0.05$ , then  $H_a$  refused to test two sides, each side divided by 2 to become
    - 1)  $/2 < 0.025$  probability figure, then  $H_0$  is accepted
    - 2) Probability Score  $/2 < 0.025$ , then  $H_a$  is rejected

It is seen that T count for intervention group blood pressure is 9,000), with a probability of 0.000 for the 2-sided test, the probability number is  $0000/2 = 0.00$  then  $H_0$  is rejected. While T count for blood pressure is  $0.000 > 0.025$ , with the probability of two tails test probability was then  $H_a$  rejected.

### The control group (Pre Test and Post Test)

The results of the statistical test (SPSS) got T count = 1,500 with significant value = 0.05, meaning it can be concluded that there is no effect of blood pressure reduction in the control group. It is shown from the significant value ( $0.803 > 0.05$ ) and T count (1,168)  $< T$  table (2,776).

Decision-making is based on a comparison of the value of T calculated and T table

- a. If t is greater than t table then  $H_a$  is rejected
- b. If t is smaller than t table then  $H_0$ 

T Unknown count was 0.258 while the T table sought it

  - a. 5% significance level to test two sides then significant levels divided into 2.5%
  - b. Df (degree of freedom) or the degree of freedom of the amount of data searched by the formula  $-1$  or  $5-1 = 4$
  - c. with the value of df = 4 and the significant value of T Table 0.05 then obtained the value of 2,776.

## CONCLUSION

Based on the research results, it can be concluded that:

1. Patients with hypertension who were not taking Consumption EsktracLaor worms (Polychaeta) do not decrease blood pressure in patients with hypertension
2. Patients with hypertension who ate Consumption EsktracLaor worms (Polychaeta) decrease blood pressure in patients with hypertension
3. There is the influence of Consumption EsktracLaor worms (Polychaeta) to decrease blood pressure in hypertensive patients Diman test results  $t 0.000 < 0.05$ .

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