

ISLAMIC PERSPECTIVE ON THE USE OF PATHOGEN BACTERIA AS AN ANTIBACTERIAL ETHANOL EXTRACT TEST ACTIVITY OF WHITE PUMPKIN LEAVES (*Lagenaria siceraria*)

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Abstract : There had been a research of antibacterial extract of white pumpkin leaves (*Lagenaria cineraria*) activity towards some pathogen bacteria. The objective of the study was to present the antibacterial activity of extract of white pumpkin leaves, commonly called *Lagenaria siceraria*, against some 8 pathogen bacteria such as (*Escherichia coli*, *Vibrio sp*, *Streptococcus mutants*, *Staphylococcus aureus*, *Salmonella thypi*, *Pseudomonas aeruginosa*, *Bacillus subtilis*, and *Staphylococcus epidermidis*). The research was conducted by extracting the white pumpkin leaves and using 96% ethanol liquid. Afterwards the screening test was performed using microbe test and ethanol extract of white pumpkin leaves with 0,5% concentration and 1 % (b/v) with negative control of disc piper. It was found that the 0,5% concentration could prevent 4 pathogen bacteria such as *Escherichia coli*, *Streptococcus mutants*, *Staphylococcus aureus*, and *Staphylococcus epidermidis*. After conducting the screening test followed by the mutant prevention concentration (MPC) test and the minimum inhibitory concentration (MIC) test, in which the result was the ethanol extract of white pumpkin leaves with 0,5% concentration could prevent 4 pathogen bacteria which was obtained from screening test 2 % concentration against extract of white pumpkin leaves that are able to kill 4 pathogen bacteria.

Another test was performed with inhibitory test through agar diffusion method so that some blocking pathogen bacteria to screening result (*Escherichia Coli*, *Streptococcus mutants*, *Staphylococcus Aurous*, and *Staphylococcus Epidermidises*) against 0,5%, 1% and 2 % concentration. Moreover the

chloramphenicol is as positive control. The result which was obtained respectively was the biggest obstacle zone diameter towards *Escherichia coli*, *Streptococcus mutants*, *Staphylococcus aureus*, and *Staphylococcus epidermidis* bacteria were 2,2 cm; 4,1 cm; 2,43 cm and 3,73 cm.

Keywords: Ethanol Extract, white pumpkin leaves, pathogen bacteria

Introduction

White pumpkin is a plant which is easy to grow because it is able to adjust itself with its environment not only in the plateau but also in the lowland with hot atmosphere. Besides it also can adjust itself with the lack of water in the dry season and the excess of water in the winter season. This plant is cultivated with its seeds (Kumar Amit, 2012).

The white pumpkin (*Lagenaria Siceraria*) has 95 % water, 3,5–6,3 % carbohydrate, 1,5 % fiber, 0,5-0,7 % protein, 0,1-0,2% fats, calcium, phosphor, provitamin A, vitamin B₁, vitamin B₂, vitamin B₃, vitamin C substances with Saponin and Polifenol (Widyaningrum, 2011). The white pumpkin leaves (*Lagenaria Siceraria*) contains of Saponin (*Lagenaria siceraria*) predicted has antiseptic (Kumar amit, 2012).

Empirically a half glass of the squeezed white pumpkin water (*Lagenaria Siceraria*) applied to cure high fever caused by typhoid or infection, can be consumed twice a day, in the morning and in the afternoon (Widyaningrum, 2011). In addition, the fruit, the leaves, the oil and the root can be used as the traditional

medicine for wormy, diabetes, hypertension, itchiness, and diuretic. Moreover the white pumpkin leaves (*Lagenaria Siceraria*) can also be insomnia medicine (Prajapati Rakesh P. 2010). Allah says in Surah \ As-Shu'ara'/26 : 7

أَوَلَمْ يَرَوْا إِلَى الْأَرْضِ كَمْ أَنْبَتْنَا فِيهَا مِنْ كُلِّ زَوْجٍ كَرِيمٍ ﴿٧﴾

Translation:

“Do they not look at the earth – how many Noble things all of kinds We have produced therein?”

Based on the verse, we can understand that the Almighty God Allah has created various useful plants on the earth for human beings because He creates everything in the world must be advantageous.

One of the factors which cause the illness into human beings is owing to the presence of the bacteria in which the microbe as a living tiny organism and only can be seen by using microscope. The bacteria are able to enter the digestion through food, drink, and contaminated fingers (Umar, 2004).

Furthermore the pathogen bacterium is one of kinds of susceptible bacteria which have detrimental effect and causes assorted diseases in human's body, animals as well as plants. A lot of pathogen bacteria causing illnesses encompass *Bacillus Subtilis*, *Escherichia Coli*, *Pseudomonas Aeruginosa*, *Salmonella Thyphi*, *Staphylococcus Aureus*, *Staphylococcus Epidermidi*, and *Streptococcus Mutants* dan *Vibrio sp*. Therefore, they became the samples of the research.

Likewise the substances of white pumpkin leaves are Saponin containing of antiseptic or blocking bacteria growth. Thereby it is able to prevent bacteria activity which is empirically can be herbal medicines for wormy, diabetes, hypertension, itchiness, diuretic, and aids human's digestion.

Saponin substance in the white pumpkin leaves is one various glycoside found in many plants. Saponin possesses froth characteristics. Thus when it is reacted with water and shaken, he forth is formed and keeps that way for a long time. Saponin is dissolved in the water and is not soluble in the ether. As a result ethanol can be used as solvent to extract Saponin compound in the white pumpkin leaves in which ethanol has become one of polar compounds or the soluble compound in the water (Lei, et.al., 2002).

Furthermore, due to those reasons this research was performed to test the antibacterial ethanol extract test activity of white pumpkin leaves (*Lagenaria Siceraria*) against pathogen bacteria.

Problem Statement

Regarding to the background analysis, the study addresses the questions as follows:

1. How is antibacterial ethanol extract activity of white pumpkin leaves (*Lagenaria siceraria*) against some pathogen bacteria?
2. In what concentrations can some antibacterial ethanol

extract activity of white pumpkin leaves (*Lagenaria Siceraria*)
block the pathogen bacteria?

The operational definition and the scope of the research

Operational Definition

1. Antibiotic is a chemical compound which is applied to limit the susceptible bacterial growth. The microorganism growth control aims to inhibit the spread of diseases and infections, to kill it in the infected organ, and to prevent the decay caused by the microorganism (Gorasiya, 2011).
2. Extraction is the process of separating one or some substances from the solid and liquid with solvent assistance, while the extract is dry, thick, or fluid made by filtering simplisia concerning plants and animals appropriately, beyond the direct effect of the sun (Harmanto Ning, 2012).
3. *Maceratingis* a process of extracting simplisia with the solvent for many times by shaking or stirring in the room temperature. Macerating method is performed to look for the simplisia containing of chemical dissolved components in the liquid, which does not consist of benzoin, tiracs and the candles (Pratiwi sylvia. 2008).
4. Pathogen bacteria are susceptible bacteria and cause many diseases in the human's boy, plants, and animals. Those bacteria encompass *Bacillus subtilis*, *Escherichia coli*,

Pseudomonas aeruginosa, *Salmonella typhi*, *Staphylococcus aureus*, *Staphylococcus epidermidis*, *Streptococcus mutants* and *Vibrio sp* (Pratiwi sylvia. 2008).

5. Denitrification is a nitrate or nitric reduction process becoming nitrogen (N_2) against N_2O as a by-product. Denitrification bacteria do not require organic material to some activities and the growth, however it needs enough inorganic substance and the source of carbon inorganic of CO_2 and HCO_3 (Pratiwi Sylvia, 2008).
6. The qualitative research is the study used to research on the natural object condition in which the researcher is the key instrument (Sugiyono, 2012).
7. The experimental research is the research which attempts to look for the certain variable effects against another variable through tight control (Sedarmayanti dan Syarifudin, 2002).
8. Effectiveness. *Effective is an English word* which means successful or something which is done/ achieved well. The popular scientific dictionary defines effectiveness as a precise application, the useful result or supporting the goal (Rianto, 2010).

The scope of the research

The scope of this research includes antibacterial activity test of white pumpkin leaves (*Lagenaria siceraria*) against some pathogen

bacteria. Moreover the analyzed bacteria were *Bacillus Subtilis*, *Escherichia coli*, *Pseudomonas aeruginosa*, *Salmonella typhi*, *Staphylococcus aureus*, *Staphylococcus epidermidis*, *Streptococcus mutants* and *Vibrio sp* and then the inhibitory was examined by applying agar diffusion method.

The Overview of Research Findings

1. Amit kumar (2012), *Phytochemical, Ethno botanical and Pharmacological Profile of Lagenaria siceraria: - A Review*. In traditional treatment, the different parts such as (leaves, stem, flower, root, seed and even all of plants) from *Lagenaria siceraria* (known as lauki in Hindi), had been utilized as salve to cure some diseases in India. The ripe fruit of *Lagenaria siceraria* has some nutrition e.g. protein, fat, fiber, carbohydrate, calcium, and magnesium. It is believed that it contains of laxative, antioxidant effect, cardio protective, diuretic, hypotoprotective, hypolipidemic, main nerve system stimulant, wormy medicine, anti-hypertension, analgesicimmune suppressive, adaptogenic and free radical activity. This study has shown that there is pharmacologist for plants extract of *Lagenaria siceraria*, by observing biology effect and phytochemical composition in it. Even though further research is required to prove the potential thing of *Lagenaria siceraria* not only in the flower but also in the other necessary parts.

2. Chinmoy Kumar Sen (2013), in the research of *Cytotoxic Effect of Lagenaria Siceraria Crude Extracts Obtained from Its Flowers: Lagenaria siceraria* is the genus of Cucurbitacea, used as a system for conventional medicine to cure some illnesses in the society. The extract of n-hexane flower, *Lagenaria siceraria*, was found that it consists of anti-tumor by implementing bioassay (BST) method. Sulfate vincristine agent sitotoxic test was performed as positive control. N-hexane extract LC50 was obtained in each of 99.167µg/ml. The positive control showed LC50 sulfate vincristine with a concentration of 0,563 µg/ml. The bioassay result in the shrimp can be predicted well that n-hexane extract has sitotoxic activity. The comparison of vincristine positive control means that sitotoxicity of N-hexane extract containing of low anti tumor substance and pesticide activity.
3. Jayasree Tirumalasetty dkk (2014), *Lagenaria siceraria: Phytochemistry, pharmacognosy and pharmacological studies*. There are herbal medicine consumed in some medical systems for treatment and examining different diseases. The Species of *Lagenaria Siceraria* have been utilized as traditional medicine for curing illnesses. The plant contains of triterpenoid, cucurbitaceous, flavone, C-glycoside beta glycoside 1, vitamin B, and ascorbic acid in the fruit. The fruit's contents are thiamin, riboflavin, niacin. The oil obtained from the seed consisting of free fat acid. It is rich

in polypeptide as well. Besides it has saponin and oil. It is also proven that it contains of Cardio tonic, hepatoprotector, Immunemodulator, anti-hyperglycemic, anti-hyperlipidemia, analgesic and anti-inflame, anti-bacteria and diuretic. This study was carried out to share information about required phytochemical and pharmacologic effect from this plant. It is cultivated in some parts of India in the small scale.

4. Sandhya V. Rodge and S. D. Biradar, (2012) *Preliminary Phytochemical Screening And Antimicrobial Activity Of Lageneria Siceraria (Mol) Standard*: The extract anti microbe effect of *Lageneria siceraria* fruit (Molina) Standl researched on the bacteria of *Escherichia coli*, *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Bacillus subtilis*, and *Candida albicans*. By applying acetone solvent, methanol, alcohol and aquadest. The extract showed significant activity against all organism tests. The etherpetroleum extract results a little activity against bacteria tests. In invitro anti microbe extract activity compared to Cephalexin antibiotic standard. The most susceptible Gram-positive bacteria are *Bacillus subtilis* and Gram-negative bacteria are *Pseudomonas aeruginosa*. Meanwhile, *Candida albicans* does not show any significant activity. MIC extract percentages were also determined ranges from 10 to 50mg / ml. It contains of tannin, saponin, flavonoid, terephenoids, alkaloid, steroid, and heart glycoside. This study has shown that the extract of

Lagenaria siceraria can be used for treating some diseases caused by organism tests.

5. Rakesh P. Prajapati, et.al. (2010). *Phytochemical Dan Pharmacology Review of Lagenaria siceraria*. *Lagenaria siceraria* (Molina) Standley (LS) (Genus: Cucurbitaceae) is a yearly herbal plant empirically utilized as traditional medicine in many countries, particularly in tropic and subtropics areas. Since the ancient era this plant was known with its curative character, and had been used to remedy some illnesses, including hepatitis, diabetes, stomach disorder, ambient, inflamed intestines, insane, hypertension, congestive cardio fail (CCF), and dermatitis. Likewise it is good for remedy and laxative, refrigeration, diuretic, and antibilious. The leaves are boiled containing oil which is used for rheumatic and insomnia. There are assorted chemical substances including sterol, terpenoid, flavonoid, saponin and isolated from its strain. In addition, from this study it was proven that the extract has pharmacology effect. In this research, the researcher explains comprehensively about chemical and profile of pharmacology as medicinal plants. Special doses is utilized as analgesic, anti-inflames, anti-hyperlipidemia, diuretic, hepatoprotective, wormy, and antibacterial effect so that the potential application of pharmacy can be well evaluated.

Prior to the previous findings, there has not been antibacterial activity test of white pumpkin leaves (*Lagenaria*

siceraria) against some pathogen bacteria.

The objective of the research

The objective of the research

- a. Evaluating the antibacterial activity test of white pumpkin leaves (*Lagenaria siceraria*) in preventing the growth of pathogen bacteria.
- b. Determining the ethanol extract of white pumpkin leaves (*Lagenaria siceraria*) concentration which can prevent the growth of pathogen bacteria.

The benefit of the research

- a. Evaluating the use of white pumpkin leaves (*Lagenaria siceraria*) as an alternative treatment from the nature.
- b. Finding out the essence of the antibacterial activity test of white pumpkin leaves (*Lagenaria siceraria*) against some pathogen bacteria.

Plants Analysis

Empirically, white pumpkin had been used by society to cure disease like typhoid. White pumpkin has another name in different countries such as: Bengali: *Lau*; Chinese: *Hu, Hu Lu Gua, Hulu, Hu Gua, Mao Gua, Peh Poh*; Danish: *Flaskegræskar, Kalabas*; Dutch: *Fleskalebas, Flessepompoen*; Finnish: *Pullokurpitsa*; French: *Gourde Bouteille, Cougourde, Calebassier, Calebasse*; German: *Flaschenkürbis, Flaschen-Kürbis, Trompetenkürbis, Kalebassenkürbis*; Hindi: *Dudhi (Dudi,*

Dodi), *Lokhi* (*Lauki*); Indonesian: *Labu Botol*, *Labu Air*, *Labu Putih*; Italian: *Zucca Da Tabacco*, *Zucca Da Vino*; Japanese: *Yungao*; Khmer: *Khlook*; Laotian: *Namꞌ Taux*; Malayalam: *Sorekai*; Marathi: *Charanga*; Nepalese: *Laukaa*, *Tito Tumba*; Oriya: *Lau*; Portuguese: *Abóbora-Carneira*, *Cabaco*; Punjabi: *Dudhi*; Sinhalese: *Diya Labu*; Spanish: *Calabaza Vinatera*, *Cogorda*, *Cajombre*, *Calabaza*, *Guiro Amargo*; Swedish: *Kalebass*, *Flaskkurbit*; Telugu: *Beerakaya*; Thai: *Namtao* (*Naam Tao*), *Manamtao*, *Khi Lau Saa*.

Furthermore, In Indonesia water pumpkin has various names, e.g. *Labu air* (Sumatera), *Labu frangi* (Malay), *Tabu* (North Sumatera), *Kukuk* (Sunda/West Java), *Labu ayer*, *Waluh Kenti* (Java), *Labu lente* (Madura), *Karobu* (East Sumba) (Shah, 2010).

Besides white pumpkin has some other names called: Bulukumba: *kunrulu*; Jenepono: *boyo china*; Gowa: *maradduse*; Java: *waluh putih* and Jakarta: *labu air* or *labu putih* (Meenal S. kubde, 2010).

Morfologi (Sumiati, 2004)

Water pumpkin is an herb vine planton a season in length, has square stem with a curve. The leaves are single with cylinder stalk, rough and green. The flower with a look like a house and tiny leave, yellow greenish, has 5 coronas, 5 stamens, and 3 pistils. The fruit is long round, green yellowish, with hard texture. It has many seeds, flat, tapering, white, and large straight root. Pumpkin is mostly easily planted because it can adjust itself to the environment not only in the cold plateau but also in the lowland

with hot atmosphere. Moreover it is able to adapt very easily to the lack of water in dry season and the excessive of water in the rainy season. It can be cultivated through its seeds. It requires 4-5 seeds/ha, by digging twice a day to loose the soil and manure. Harvest time is too short ranged from 70 to 90 days depending on the level of required time. During harvesting, the stem of the water pumpkin should be cut by knife and be careful not to fall it. When cutting it, leave 5 cm stalk, so it is not cut wholly (Shah, 2010).

The essence of white pumpkin leave is saponin which its secondary metabolite compound has foam, and it is able to be hemophilia for red corpuscle. The form of the foam when reacting with simplisia has proven the presence of saponin (Harbone in wawolumaya, 2012). Saponin consists of foam characteristic. When it is reacted with water and shaken will form lasting foam. It is dissolved in the water and is not soluble in the ether. Besides is really bitter and causes sneezing and irritation in cornea. However it is poisonous which can destroy the blood orhemophilia in it. In addition it becomes poison for poikilothermic animals and also utilized as poison for fish. It is solid state as well. Likewise it is an antibacterial compound which also biologically and chemically kills or prevents the antibacterial activity growth by blocking the protein synthesis or organizing the ribosome (Hartono in Wawolumaya, 2011).

Antimicrobial

Definition

Antimicrobial (AM) is a compound which can kill or prevent the microorganism growth. The anti microbial substance killing the microorganisms is called as micro biocide. Meanwhile the substance growth of microorganism is named as micro biostatic. In its development, the spreading anti-microbe tends to be synthetic. If it is used continuously will cause health disorder (Harmanto Ning, 2012).

Moreover anti-bacteria are substances utilized to restrain the dangerous bacterial increase. This microorganism restriction aims to block the spread of illnesses and infection, eliminate microorganism to the infectious patient, and prevent putrefying or decay resulted by microorganism (Sulistyo, 1971). Likewise the anti-microbe encompasses anti-bacteria, anti-mitotic, and antiviral strain (Ganiswara, 1995).

The drugs applied to eliminate microorganisms causing infection to human beings, plants, or animals has selective toxicity which means that the medicine or the substance can react as a toxin against the microorganisms resulting disease but is relatively does not work against corpses or hospes (Djide, Natsir dan Sartini, 2008).

The principle activity of anti-microbe

An anti-microbe shows the selective toxicity in which the medicine is toxic against its microorganism compared to hospice

cells. It can occur owing to the selective medicine against the microorganisms or due to important biochemical reactions of the medicine in parasite cell is much better than its impact on hospice cells. Besides the structure of microorganism cell is different from human body's structure (hospice, patient) (Djide, Natsir dan Sartini, 2008).

The mechanism of anti-microbe

Anti-microbe has some main mechanisms as follows:

a. The inactivity of certain enzyme

The inactivity of certain enzyme is the main mechanism from antiseptic substance and disinfectant, such as elements of aldehyde, amide, calbanilyde, ethylene-oxide, halogen, mercury substances and quartener ammonium substance.

b. Protein Denaturation

Alcohol, halogen and halogenate elements, mercury substance, per-oxide, phenol element and quartener ammonium substance functioned as antiseptic and disinfection by densaturation and bacteria cell protein conjugation.

c. Changing bacteria cytoplasm membrane permeability

This process is parts of amine and guanidine, phenol and ammonium substance quartener elements. By changing bacteria cytoplasm membrane permeability, those substances lead to the leak of essential cell constituent, and consequently the bacteria are killed.

d. Intakelation into DNA

A lot of colorful substances as the elements of triphenilmethane and acridine, reacting as anti-bacterial by binding it firmly with nucleate acid, preventing DNA synthesis and causing the change of mutation framework of protein synthesis.

e. Forming chelate

Some phenol elements, such as hexoclorophen and oxikuinoline can form chelate with Fe and Cuions, then it enters bacteria cell. The high levels of metal ions in the cell causing functional enzymes disorder as a consequence it eliminates the microorganism.

f. Reacted as antimetabolite

Anti-microbe blocks the steps of metabolic specific microbe, such as sulfonamide and trimethoprim. Sulfonamide inhibits the cell growth by preventing pholate acid synthesis by bacteria. Sulfonamide structurally looks like pholate acid, some amino benzoic acid (PABA), plays a role competitively for enzymes which directly unites PABA and part of pteridin to be dihidhropteroate acid.

Trimethoprim is structurally analog pteridin which is divided by reductive dihydropholate enzyme and its activity is as the competitive enzyme inhibition which can diminish dihydropholate to be tetra-hydrofolat.

g. The inhibition against synthesis membrane

This anti-microbe inhibits or blocks the enzyme activity which

deteriorates microorganism membrane cell including penicillin, sefalosforine, vankomisin, ciclocerine, and bacitracin.

Penicillin plays a role as a structure analog of D-alanil-D-alanine which situated from trans-peptidase enzyme resulting cross-link between microorganism membrane cells (bacteria).

It can prevent the cross-link as well.

h. The inhibition of membrane cell permeability function

Anti-microbe was determined directly to membrane cell affecting permeability and causing the discharge of microorganism intra cellular substance (bacteria).

The respond classification of bacteria growth inhibition (Greenwood, 1995)

Light zone diameter	Growth inhibition respond
>20 mm	Strong
16-20 mm	medium
10-15 mm	weak
<>	Nothing

Another anti-bacterial and anti-microbial method test is by applying Tube Dilution Test technique. The function is to reveal the result of MIC directly. In addition the other method is E-test method which is easy diffusion test method and demonstrates the result of MIC (Underwood, 1995).

Chloramphenicol

1. Source

Chloramphenicol is an antibiotic that is derived from *Streptomyces Venezuelae*, the organism which was firstly isolated in 1947 from land sample collected from Venezuela (Bartz, 1948). When the simple crystalline material structure was found, it was directly formed into antibiotic. Moreover it was made syntactically. At the end of 1947, a little of chloramphenicol was revealed to cure epidemic typhoid which suddenly appeared in Bolivia with astonishing result. After that the medicine was examined in scrub typhoid cases in Malaka peninsula with good result. In 1948, chloramphenicol has been available for public clinic. Nevertheless, in 1950, it was proven that the drug causing a serious case and fatal blood discracia. Therefore, the use of the medicine specifically consumed by the patient who suffer from severe infection, e.g. meningitis, typhoid, and typhoid fever, who cannot exploit another safe alternative due to the resistance or allergy. It is also useful for effective therapy for *Rocky Mountain* spotted fever

2. Biosynthesis

In normal cycle of life, *Streptomyces venezuelae* will grow in an appropriate medium and results a maximum numbers of cells. Afterwards it stops the growth and enters the stationary phase. Finally it is followed by the death of vegetative cell or the form spore. Furthermore at this stage, after the cells stop splitting, the secondary metabolite begins to produce in big numbers and most of them are secreted in the cultivating medium. Most of the

antibiotics are secondary metabolite.

The biosynthesis column in forming the sequences of a metabolite is from the simplest molecule to the most complex one. The knowledge of this biosynthesis may be able to perform modification so that it can be produced in huge numbers in the short time. In addition, finding the metabolite structure produced then the synthesis is exhibited to show the derivation.

Definition

Chloramphenicol is a stable neutral substance. This drug is soluble in alcohol but not dissolved in the water. The chloramphenicol is used to provide parenteral, which is really soluble in the water. It is a dihydrolytic medicine associated with chloramphenicol freedom (Katzung, 2013).

The mechanism of Chloramphenicol

Chloramphenicol is a microbe protein synthesis inhibitor. The medicine is reversible bound with submit ribosome bacteria by preventing the form of peptide bound. Chloramphenicol is large antibiotic spectrum, bacteriostatic, and active against Gram-positive and negative, aerobe and anaerobe. Likewise gives an effect by reacting on sub unit 50S ribosome and inhibiting transference peptide enzyme activity. This enzyme is useful to form the peptide bound between new amino acid which is still associated with t-RNA and the last developing amino acid. As a result, the bacteria synthesis protein stops right away (Pratiwi, 2008). The resorbance from fast intestines, with bioavailability was 75-90 %. The diffusion of tissue, cavity, and body liquid was good

except in the gall. The amount of cerebra-spinal solution was high, and the plasma t was 1/2- in 3 hours. The excretion through kidney, mainly as inactive metabolite approximately was 10% completely (Katzung, 2013).

Pharmacokinetic

After oral treatment, chloramphenicol was absorbed fast. The top level of blood was reached within 2 hours. Children are usually given in ester chloramphenicol palmitate or stearate form whose taste is not bitter. The ester form willact ashydrolysis in the intestine and free the chloramphenicol. In addition the parenteral is determined with chloramphenicol succinate which will be hydrolyzed in the tissue and free the chloramphenicol. The elimination time for adult is around 3 hours, for babies who are from 2 weeks are given about 24 hours. Approximately there are 50% of chloramphenicol in the blood is bound with albumin. This medicine is distributed well to all of organs including brain, cerebrospinal liquid and eyes. Moreover in the liver, the chloramphenicol demonstrates conjugation, as a consequent in long period it causes cardio failed to patients. Some of them are reduced becoming inactive arilamine substance again. In 24 hours, 80-90% chloramphenicols are given orally and it is excreted through kidney. Of all excreted chloramphenicol, there is only 5-10% in active form. However the rest is glucoronate form or another active hydraulics. The active chloramphenicol excreted especially through filtrate glomerulus. Despite its metabolite is

excreted with tubules secretion. For kidney failed, in the active chloramphenicol period, it does not change a lot. As a result, the dose reduction is not required. In comparison, it needs diminishing if there is hepar function disorder.

a. Islamic perspective

Currently there have been many researches focusing on the plants carried out by some experts developed to be medicines. Furthermore, our country is rich of natural resources or assorted plants containing many advantages for human life. One of them is for herbal treatment which is well known as traditional medicine (Abdus-Shamad, 2002). Prior to this analysis, Allah The Most High mentions about various plants on the earth in Surah Qaf/50 verse 7:

وَالْأَرْضَ مَدَدْنَاهَا وَأَلْقَيْنَا فِيهَا رَوَاسِيَ وَأَنْبَتْنَا فِيهَا مِنْ كُلِّ زَوْجٍ بَهِيجٍ



Meaning:

“*And the Earth We have spread it out, And set there on mountains Standing firm, and produced There in every kind of Beautiful growth (in pairs)*”

It is understood by some Moslem religious teachers that Allah The Most High grows many kinds of plants on the earth in which it has specific growth and harvest periods. It is based on the quantity and creatures’ needs. Moreover, Allah The Most High determines their forms based on its creations and nature’s habitat (Tafsir Al-misbah, 2002).

Furthermore it can be seen that there are various plants with

their each specialties such as growing in the water and the rain falls of the sky for them. Thus it shows how Great the Almighty God is. In addition that those assorted plants are beautiful and exciting to see. Thereby that analysis has proven His Mighty Power. Therefore, it should attract all of human beings to thank to God and admire the Creator. (M. Qurais Shihab. Tafsir Al-Misbah. Edition 13. 2009).

Besides the interpretation of the mentioned verse above that human beings must thank to Allah's rewards or gifts through the useful plants for fulfilling their needs. Likewise the plants are created by Allah The Most High. Owing to the variety of plants provided by the Almighty God have many advantages and specific purposes which can be used by human beings as not only the alternative treatment but also as the food.

In addition health is human being's right, something which is essential for them consequently they need to be on being consistent to spread and maintain Islam. One of health disorder factors is due to the presence of bacteria or microorganism entering our body. The bacteria are divided into two kinds such as harmful bacteria and useful bacteria. As what Allah says in the Holy Qur'an Surah Al-Nur: 45 about the creation of microorganism:

وَاللَّهُ خَلَقَ كُلَّ دَابَّةٍ مِّن مَّاءٍ فَمِنْهُمْ مَّن يَمْشِي عَلَى بَطْنِهِ وَمِنْهُمْ مَّن يَمْشِي عَلَى رِجْلَيْنِ وَمِنْهُمْ مَّن يَمْشِي عَلَى أَرْبَعٍ يَخْلُقُ اللَّهُ مَا يَشَاءُ إِنَّ اللَّهَ عَلَىٰ كُلِّ شَيْءٍ قَدِيرٌ ﴿٤٥﴾

Meaning:

"And Allah has created every animal from water. Of them there are some that creep on their bellies: some that walk on two legs; and some that walk on four. Allah creates what He wills, for verily Allah has power over all things".(Surah Al-Nur : 45)

As M. Quraish Shihab stated in his book entitled *Tafsir Al-Misbah* explaining that the interpretation of that verse is that: *And*, besides some proves of His Power and His blessings, *Allah* also creates various animals from the water of which flows the water as He provides the plants with the rainfall. And then He makes many kinds of animals, their advantages and functions, including bacteria.

Thus it shows how powerful God is and His absolute decisions. On the one hand, the creation materials are the same, e.g. water. On the other hand, He creates different kinds of water. Besides of those distinctions, He provides some potential creations in very assorted substances with different level amount of water which was the main material of its creation.

Prior to the interpretation book of Religion Department of Republic Indonesia, the verse above Allah guides human attentions to notice the animals including bacteria from their genus and

forms. Similarly He makes those animals and plants of air. In fact the water has become the main source for animals' life and most of the elements in their body consisting of water, and they cannot survive without the existence of water. Allah explains that He creates everything He wants not only animals with many legs but also animals with assorted forms including bacteria.

Allah does not create everything just for nothing, as stated in the Holy Qur'an, Allah The Most High in Āli-Imrān/3: 191, that:

الَّذِينَ يَتَّبِعُونَ اللَّهَ قِيَامًا وَقُعُودًا وَعَلَىٰ جُنُوبِهِمْ وَيَتَفَكَّرُونَ فِي خَلْقِ
السَّمَاوَاتِ وَالْأَرْضِ رَبَّنَا مَا خَلَقْتَ هَذَا بَاطِلًا سُبْحَانَكَ قَوْلُنَا عَذَابَ
النَّارِ

Meaning:

“Men who celebrate the praises of Allah, Standing, sitting, and lying down on their and contemplate the (wonders of) creation in the heavens and the earth, (with the thought)” Our Lord! Not for naught has Thou created all this! Glory of Thee! Give us salvation from the penalty of the fire. (Religion Department of RI. 2010: 110

The verse describes the criteria of called Ulul Albâb, people either men or women, who always remember Allah, with words, heart, in every conditions, at work, and even in the rest or break time. Regarded to that verse remembering is only for Allah, while the objects of our thoughts are His creatures encompass nature phenomena. It means that the recognition of Allah will be based on the heart, in contrast with environment recognitions which focuses on the brain activity, namely thinking. Brain has large

freedom to think about natural phenomena, but it also has some limitations in thinking about God's substance. People who can read this nature implicitly will understand/get Him (Shihab, 2009).

The sky with its height and width, and the earth with its large lowland, and its solid object with everything between them are the signals of His merciful power. Likewise we can see the other things for example the animals which keep moving or staying, the sea, the mountainous, trees, plants, flowers, fruits, mining, microorganism, with different colors and different aroma completed with their own specialty or strength (Shihab, 2009).

Prior to the study which is applied ethanol solvent as the element of alcohol describes that the law against the use of this solvent is: Ethanol is etil alcohol which its chemical substance found in alcoholic drink or sometimes called as *arak* in Bahasa Indonesia. Despite using it in alcoholic drink, ethanol can be utilized as fuel instead of gasoline. In the Hoy Qur'an Surah Al-Maidah verse 90 about the prohibition of consuming alcoholic drink is:

يَتَأْتِيهَا الَّذِينَ ءَامَنُوا إِنَّمَا الْخَمْرُ وَالْمَيْسِرُ وَالْأَنْصَابُ وَالْأَزْلَامُ رِجْسٌ مِّنْ
 عَمَلِ الشَّيْطَانِ فَاجْتَنِبُوهُ لَعَلَّكُمْ تُفْلِحُونَ ﴿٩٠﴾

Meaning:

“ O Ye who believe! Intoxicants and gambling, (Dedication of) stones and (divination by) arrows, are on abomination – of Satan's handiwork; eschew such (abomination), that ye may prosper. ”

Imam Bukhari stated about the regulations of prohibitions

were delivered to the people or Islamic followers that owing to alcoholic drink is one of deteriorated factors which lose our wealth thus it was followed with the prohibition of drinking intoxicant as well as gambling. Furthermore gambling is one ways of destroying our property, thus it was followed with the prohibition of worshipping statue which means deteriorating religion.

Similarly it is stated in prophetic tradition about the threat of consuming alcoholic drink or for all of intoxicant drinkers. From Jabir RA, *marfu* prophetic tradition:

إِنَّ عَلَى اللَّهِ عَزَّ وَجَلَّ عَهْدًا لِمَنْ يَشْرَبُ الْمُسْكِرَ أَنْ يَسْقِيَهُ مِنْ طِينَةِ الْخَبَالِ، قَالُوا: يَا رَسُولَ اللَّهِ وَمَا طِينَةُ الْخَبَالِ؟ قَالَ: عَرَقُ أَهْلِ النَّارِ أَوْ عَصَاةُ أَهْلِ النَّارِ.

Meaning:

“*Muhammad peace and salutation on him: Allah has makes His promise to intoxicant drinker, will give them “thiianatil-khabbaal” drink, then they asked “Oh, the messenger of God, what is “thiianatil-khabbal” drink?” he replied “it is the sweat or the liquid of the hell inhabitants.”* (HR. Muslim).

In addition as written in *Tafsir Al-Misbah* by “M. Quraish Shihab” Abu Hanifah limited the amount of wine to drink which is processed and boiled it, and then let it clear. Obviously it is forbidden to drink or gulp it a little or more, regardless whether it makes them drunk or not. On the other hand, all of squeezed fruits which are potentially intoxicating, Abu Hanifah said, it is called as intoxicant and not forbidden to drink unless factually intoxicating. This opinion is refused by the other Islamic scholar thoughts. For the majority of Islamic Moslem teachers, any kind of drink can be consumed in normal amount by someone but it is

intoxicating, it referred to intoxicant and forbidden to drink. It is based on prophetic tradition of the messenger of God peace and salutation (P.A.S.) on him that: “every intoxicating drink is forbidden and it is including in intoxicant, and every intoxicant is forbidden” (HR. Muslim dari Ibn Umar). Besides prophetic tradition of the messenger of God (P.A.S.) on him stated that *“every intoxicating thing if it is drunk in much amount is forbidden even if it is just a little”*.(Quoted by Ibn Majah through Jabir Ibn Abdillah)“ Prior to the discussion above, Thahir Ibn Asyur finally concludes that intoxicant is not forbidden thing if it is not excessive and not intoxicating.

It is also reinforced with the other prophetic tradition of the messenger of God (P.A.S.) on him:

كُلُّ مُسْكِرٍ حَمْرٌ وَكُلُّ مُسْكِرٍ حَرَامٌ.

Meaning:

“Any kind of drink, if it is too much and intoxicating, so a little amount of it will be forbidden.”(HR. Ahmad, Abu Daud, Tarmizi).

Regarding to prophetic tradition of the God’s messenger, it can be inferred that the messenger of God (P.A.S.) on him reinforces or confirms that in Islamic perspective, the intoxicating food and drink are categorized as forbidden to consume.

Therefore the use of ethanol as solvent in this research does not cause drunk or insanity can cause badness or nerve disorder. As a consequence, the use of ethanol solvent is allowed in this research. Prior to those verse and prophetic tradition, Allah shows

His Majesty as a Creator of the world. In addition, even though the human being wants to change anything, if Allah does not allow it, it will not occur. Moreover in conducting health treatment, if God has not allowed and not appropriate with laws/regulations, so Allah will not bless them. Allah reinforces that NO matter how smart the person is in examining the treatment and conducting genetic change research, if He does not require it, it means that they are not able to adjust with the regulations of the Creator who knows the human beings well and what is inside / occurs in the entire of the world in detail. Consequently as worshipers who learn about medical treatment, the people should always be thankful to God and does not deny it, and expects His blessing for any efforts to create medicine that it can cure the diseases with His permission and power of the Creator. It is due to everything we do will be justified and returned to Him.

Research Method

Sampling method

The sample of white pumpkin leaves (*Lagenaria siceraria*) obtained was cleaned by flowing water and then they were filtered. The clean white pumpkin leaves then they were distorted wetly and weighted. Afterwards they were thinly-sliced and dried for a few days. The dry samples were then placed them in a covered plastic.

The procedures of test bacteria suspension

The 24 hours bacteria test was suspended in 10 ml solvent NaCl physiologies (NaCl 0,9%) then measured the absorbance against 25% T with spectrophotometer UV-VIS on 580 nm wave length.

Antibacterial screening test

Each 50 mg ethanol extract of white pumpkin leaves (*Lagenaria siceraria*) were dissolved in 0,2 ml DMSO by using micropipette, then they were mixed with 9,8 ml medium NA until the last 10 ml volume were obtained. After that the mixture was poured into petri dish aseptically by shaking it in order to make it flat and solid. The fertile bacteria were then entered and the piper disc dropped with 20 μ diluted sample was inserted in concentration 0,5 %, 1 % and 2 % on the medium and incubated under 37°C degrees for 1x24 hours. The observation of the activity was carried out to find out whether the microbe grew or not in the medium.

Antibacterial test

a. The minimum inhibitory concentration (MIC)

The minimum inhibitory (MPC) conducted with 3 dilutions against ethanol extract of white pumpkin leaves (*Lagenaria siceraria*) was 0,5%; 1%; dan 2 %. Stock solution ethanol extract of white pumpkin leaves (*Lagenaria siceraria*) was 2 %, and dissolved with 0,2 ml DMSO, GNB medium was added

until 10 ml. Each dilution tube was obtained in the stock solution based on measurement and was made sufficient with GNB medium. After that 1 ose bacteria were incubated for 1x24 hours at 37°C. The turbidity was observed.

b. The mutant prevention concentration (MPC)

GNA Medium was entered into petri dish then let it solid. Each incubation poasile was etched in MIC test, and incubated for 1x24 hours at 37°C. The MPC value revealed was exhibited by the absence the microbe growth on the lowest sample concentration (Mufid Khunafi, 2010).

c. Antibacterial activity test

Antibacterial activity test of white pumpkin leaves ethanol extract (*Lagenaria siceraria*) was demonstrated with agar diffusion method using 0,5%, 1% and 2% concentration with positive chloramphenicol control taken from 10 ml of GNA medium then poured into petri dish until solid. The bacteria were then it was etched in the solid medium by using cotton bud. Disc paper which had been submerged in phial containing of samples with each concentration was placed in petri dish filled with medium and microbe suspension. It was then incubated for 1x24 hours at 37⁰C, and the formed restricted zone was noticed.

Results

The ethanol extract of white pumpkin leaves (*Lagenaria siceraria*) against pathogen bacteria results are shown in Table 1 as follows:

Table 1. The result of screening test observation (the screening test) of white pumpkin leaves (*Lagenaria siceraria*) ethanol extract.

Sample	Microbe Test							
	EC	PA	SA	ST	VB	SM	BS	SE
White pumpkin leaves ethanol extract (<i>Lagenaria siceraria</i>).	+	-	+	-	-	+	-	+

Table 2. The ethanol extract inhibition diameter of white pumpkin leaves (*Lagenaria siceraria*) against pathogen bacteria.

Bacteria	Replicas	Concentration			Positive control (Chloramphenicol)
		0,5 %	1 %	2 %	
		Diameter (cm) of ethanol extract inhibition zone of white pumpkin leaves (<i>Lagenaria siceraria</i>)			
<i>Staphylococcus aureus</i>	I	0,8	0,9	1	2,8
	II	0,7	0,8	0,9	2,8
	III	0,8	0,7	0,9	2,8
	Average	1,76	1,93	2,2	2,8
<i>Escherichia coli</i>	I	0,8	1,4	1,7	2
	II	0,7	1,4	1,8	2,1
	III	0,7	1,3	1,8	2
	Average	1,73	3,23	4,1	4,76
<i>Staphylococcus epidermidis</i>	I	0,7	1	1,1	2,5
	II	0,8	0,9	1	2,6
	III	0,8	0,9	1	2,5

	Average	1,76	2,2	2,43	5,93
	I	0,9	1,6	1,5	3,5
<i>Streptococcus mutants</i>	II	0,8	1,5	1,7	3,5
	III	0,8	1,5	1,6	3,2
	Average	1,96	3,6	3,73	8,06

Discussion

The sample applied in this study is white pumpkin leaves (*Lagenaria siceraria*) that were extracted to obtain the active substance in the samples. Harmone in Wawolumaya (2012), the white pumpkin leaves contain of tannin compounds which one of them was functioned as antiseptic was saponine compound as a secondary metabolite compound that can form foam, and it is expected to pull tannin compound with polar solvent which was 96 % ethanol especially for saponin compound in the sample.

Furthermore the antibacterial activity of white pumpkin leaves (*Lagenaria siceraria*) ethanol extract was then screened by implementing agar diffusion method. This test was a screening test to demonstrate the antibacterial activity of a sample. The result found will be used for the following test.

The screening test was carried out by screening test method against 8 pathogen bacteria called: *Escherichia coli*, *Vibrio sp*, *Streptococcus mutants*, *Staphylococcus aureus*, *Salmonella thypi*, *Pseudomonas aeruginosa*, *Bacillus subtilis*, dan *Staphylococcus epidermidis* with NA medium which was observed whether the bacterial growth existed or not with the concentration was 0,5 % and 1 %. The result

obtained from the observation was the presence of 4 bacteria does not restrict namely *Vibrio sp*, *Salmonella thypi*, *Bacillus subtilis* and *Pseudomonas aeruginosa*. It was caused by the low concentration extract used so that it cannot prevent the pathogen bacteria due to the bacteria which were Gram-negative bacteria consisting of *Bacteriocins-like inhibitor*, bacteria blocking the strange substance from an organism in one strain, interspecies or from the environment which enters the cell. In addition, the concentration used was 0,5 %. Meanwhile the inhibited bacteria of these white pumpkin leaves extract such as *Escherichia coli*, *Streptococcus mutants*, *Staphylococcus aureus*, dan *Staphylococcus epidermidis* with the same concentration was 0,5 %.

Based on the screening test, the next minimum inhibitory concentration (MIC) test was carried out by examining 4 bacteria including *Escherichia coli*, *Streptococcus mutants*, *Staphylococcus aureus*, and *Staphylococcus epidermidis*. This test was performed to find out the specific restricted concentration resulted from white pumpkin leaves ethanol extract against pathogen bacteria after conducting screening testor preface test. Prior to (MIC) test, the existence of bacteria was shown through the turbidity in each tube. Moreover 3 samples concentration of white pumpkin leaves (*Lagenaria siceraria*) ethanol extract of (% b/v) was 0,5%; 1%; and 2%. In this research, chloramphenicol was applied as positive control. Similarly it became an antibiotic containing of bacteriostatic activity. The bacteriostatic compound often restricts protein synthesis or binds ribosome in high bactericide doses. Likewise the bactericide

compound showed an impact by restricting the growth against logarithmic phase in the cell so that the living cells numbers were diminished. Furthermore chloramphenicol affected by reacting in sub unit 50S ribosome and blocked the transference peptide enzyme activity. His enzyme acts to form the binding of peptide between new amino acid sticking on t-RNA with the last developed amino acid. As a result, the bacteria protein synthesis protein will stop at once (Pratiwi, 2008). The effective chloramphenicol against aerobe Gram-positive bacteria includes *Salmonella thypi*. It is an antibiotic which has large spectrum activity. Thereby the chloramphenicol was used as positive control.

The result obtained in MIC test on concentration was 0,5 %, the white pumpkin leaves ethanol extract can restrict the *Escherichia coli*, *Streptococcus mutants*, *Staphylococcus aureus*, and *Staphylococcus epidermid* bacteria growth.

In addition another test performed was mutant prevention concentration (MPC) test through etching method using GNA medium against each samples concentration. This test was exhibited to reveal the mutant prevention concentration from ethanol extract of white pumpkin leaves against applied pathogen bacteria. It was revealed from MPC test that after being incubated for 1 x 24 hours, the concentration obtained was 2 %.The samples were able to kill *Escherichia coli*, *Streptococcus mutants*, *Staphylococcus aureus*, and *Staphylococcus epidermidis* bacteria.

Regarding to the screening test, the antibacterial inhibition test was performed by applying agar diffusion method (GNA

medium). It was noted from the test that inhibition was found in *Escherichia coli* bacteria with each restriction diameter concentration of 0,5 %; 1 % and 2 % was 1,73 cm; 3,23 cm; and 4,1 cm. *Streptococcus Mutants* bacteria with each restriction diameter concentration of 0,5 %; 1 % and 2% was 1,96 cm; 3,6 cm; 3,73 cm. Besides *Staphylococcus aureus* bacteria with concentration of 0,5 %; 1 % and 2% was 1,76 cm; 1,93 cm, and 2,2 cm. Likewise *staphylococcus epidermidis* with concentration of 0,5 %; 1 %; 2% was obtained diameter 1,76 cm; 2,2 cm; and 2,43 cm. Prior to general standard regulated by Health Department (1988) in Anang (2007) mentioned that microbe is confirmed to be sensitive against plants anti-microbe if the inhibition diameter size was 1,2 cm – 2,4 cm or the same with 12 mm – 24 mm. This study demonstrated that the ethanol extract of white pumpkin leaves (*Lagenaria siceraria*) with restriction diameter resulted is appropriate with the standardized diameter determined by Health Department was 1,2 cm – 2,4 cm or equal with 12 mm – 24 mm.

In contrast Surawiria in Rahmawati (2006) the antibiotic power measurement based on David-Stouts method, cited that if transparent diameter zone was ≤ 5 mm or the same with $\leq 0,5$ cm revealed weak antibacterial activity, the diameter was 5-10 mm or equal with 0,5-1 cm showed medium antibacterial activity, the diameter 10-20 mm or the same with 1-2 cm demonstrated strong antibacterial activity and the diameter > 20 mm was equal with 2 cm exhibited very strong antibacterial activity. Therefore, regarding to the analysis above, ethanol extract of white pumpkin leaves of

concentration was 0,5 % including strong antibacterial category with 4 pathogen bacteria used (*Escherichia coli*, *Streptococcus mutants*, *Staphylococcus aureus*, and *Staphylococcus epidermidis*) because the restriction zone diameter obtained was about 10-20 mm or equal with 1-2 cm. In contrast the concentration of 1 % including strong bacteria category called *Staphylococcus aureus* due to restriction zone diameter obtained around 10-20 mm or the same with 1-2 cm while the very strong antibacterial of *Escherichia coli*, *Streptococcus mutants*, and *Staphylococcus epidermidis* bacteria owing to restriction zone diameter obtained around >20 mm or equal with > 2 cm. Besides on 2 % concentration of white pumpkin leaves ethanol extract including very strong antibacterial category against pathogen bacteria applied (*Escherichia coli*, *Streptococcus mutants*, *Staphylococcus aureus*, and *Staphylococcus epidermidis*) because the restriction zone diameter obtained was about >20 mm or equal with > 2 cm. It can be concluded that:

1. White pumpkin leaves (*Lagenaria siceraria*) activity can prevent pathogen bacteria, 8 bacteria examined were *Escherichia coli*, *Streptococcus mutants*, *Staphylococcus aureus*, and *Staphylococcus epidermidis* while it cannot prevent the growth of *Vibrio sp*, *Salmonella thypi*, *Bacillus subtilis* and *Pseudomonas aeruginosa* bacteria. Empirically it can be used as traditional medicine for some diseases for example the itchiness and the digestive disorder.

2. White pumpkin leaves (*Lagenaria siceraria*) can inhibit pathogen bacteria like (*Escherichia coli*, *Streptococcus mutants*, *Staphylococcus aureus*, and *Staphylococcus epidermidis*) with concentration

was 0,5 % with optimum concentration was 2 %.

From the obtained result, white pumpkin leaves restrict *Staphylococcus epidermidis* and *Staphylococcus aureus* bacteria. It was found that those both bacteria can cause irritation against the skin such as itchiness, pimple, ulcer and dandruff. It is based on empirical data obtained that white pumpkin leaves were widely used as herbal medicine especially the drug for itchiness. On the other hand the *Escherichia coli* bacteria, white pumpkin leaves are effective in preventing *Escherichia coli* bacteria. It is commonly known that *Escherichia coli* can cause diarrhea, sepsis or depression, shock and sort of them. In the other bacteria of white pumpkin leaves can inhibit the growth of *Streptococcus mutants* bacteria which causes caries on teeth. Nevertheless, there have not been empirical data proving about the use of white pumpkin leaves against diseases caused by *Streptococcus mutants*. The observed inhibited zone seems that the restriction increases in line with the increase of ethanol extract concentration of white pumpkin leaves (*Lagenaria siceraria*).

In addition the ethanol extract of white pumpkin leaves (*Lagenaria siceraria*) exhibited that the restriction against some pathogen bacteria called *Streptococcus mutants*, *Staphylococcus aureus*, *Escherichia coli* and *Staphylococcus epidermidis* with variant analysis result against F table restricted zone of ethanol extract of white pumpkin leaves against some pathogen bacteria (*Streptococcus mutants*, *Staphylococcus aureus*, and *Staphylococcus epidermidis*) demonstrated the significant result or contained of the smallest

distinction in which the measurement of F value $>$ from F table on 95% trust standard.

On the result of different real honesty test, obtained the result that the sample concentration was 0,5%, 1% and 2 % which was really different from real positive control so that there has not been obtained optimum concentration which was equal with positive control

Conclusion

Prior to the result of the research, it can be concluded that:

1. The ethanol extract of white pumpkin leaves (*Lagenaria siceraria*) has antibacterial activity against *Staphylococcus aureus*, *staphylococcus mutants*, *staphylococcus epidermidis* and *E. coli* bacteria.
2. The ethanol extract of white pumpkin leaves (*Lagenaria siceraria*) can restrict *Staphylococcus aureus*, *staphylococcus mutants*, *staphylococcus epidermidis* and *E. Coli* bacteria on 0,5% concentration and kill those bacteria on 2 % concentration.

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