

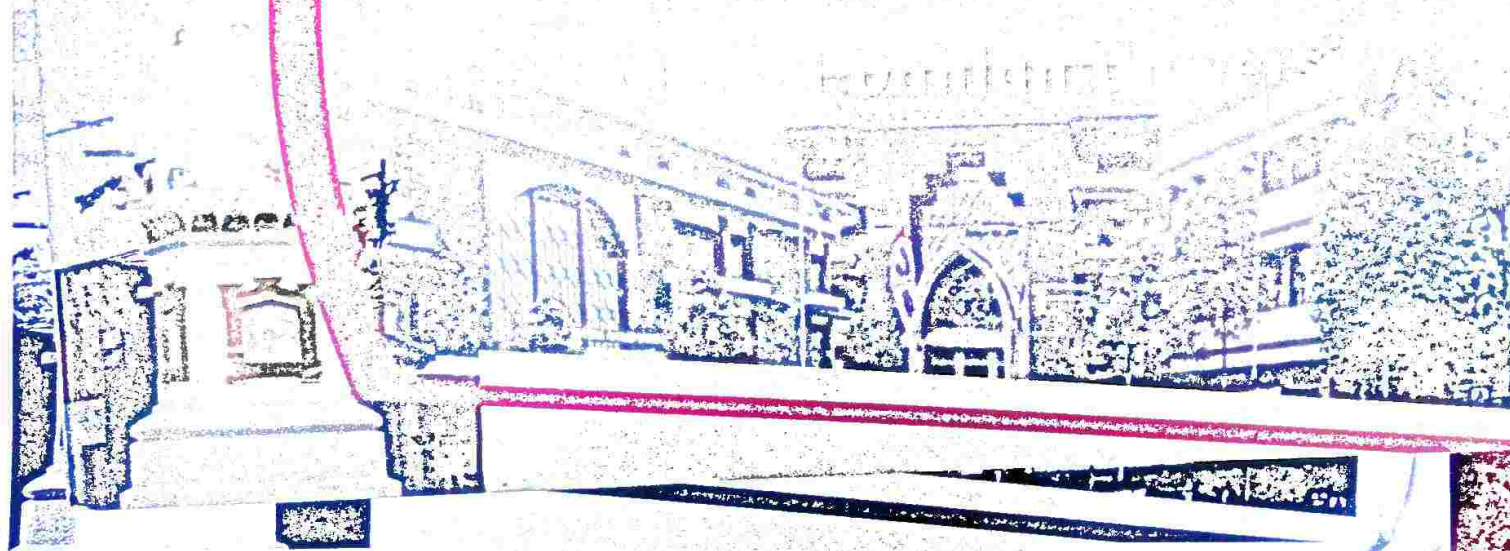


PROCEEDING

International Conference on Restorative Justice

4 January 2014, Grand Tjokro Hotel, Yogyakarta

Consumer Protection
"Law and Pharmacy Perspectives"



PROCEEDING

INTERNATIONAL CONFERENCE ON RESTORATIVE JUSTICE

Theme :
Consumer Protection: "Law and Pharmacy Prespective"

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Deputy Health Minister of Republic Indonesia

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Speaker V

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Saturday, January 4, 2014

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PENGESAHAN
Telah diperiksa kebenarannya dan sesuai dengan...
Yogyakarta tgl. ...
FAKULTAS FARMASI UNIVERSITAS AHMAD DAHLAN
DEKAN
Dr. Dyah Aryani Perwitasari, Apt., Ph.D.
NDY. 60010302

Welcome Address from Chairman of Organizing Committee

Bismillahirrahmanirrahim

The Honorable

Deputy Minister of Health Republic of Indonesia
Rector Ahmad Dahlan University Yogyakarta
All The Conference Speakers
Academic Staffs of Ahmad Dahlan University Yogyakarta
Ladies and gentleman, all the conference participants

Assalaamualaikum Warahmatullahi Wabarakatuh

We say thankful to Allah SWT that we have been given a chance to attend this International Conference on Restorative Justice with theme Consumer Protection: "Law and Pharmacy Perspectives". On behalf of the all speaker, steering committee, and participants, I would like to say "Welcome and enjoy the excotic city of Yogyakarta Indonesia".

Ladies and gentleman,

Few months ago, we saw a lot of legal cases related to criminalization of health profession. More malpractice cases have been heard in court and healthcare provider deem this as criminalization of the profession. An article at Jakarta post quoted that the medical profession is deeply related with the Good laws, which offer legal protection to people who provide reasonable assistance to those injured, in peril, or incapacitated. In some cases, the Good laws encourage people to offer assistance (duty to rescue). The protection is intended to reduce by standers' hesitation to assist, for fear of being sued or prosecuted for unintentional injury or wrongful death.

We adopted the conference theme as "Consumer Protection: Law and Pharmacy Perspective" due to the number of legal issues in the healthcare section becomes interesting today. This conference aims to provide insight to the health professionals and the public as consumers to better understand the legal issues, especially in the health world.

We express our huge appreciation to all speakers, presenters, participants, committees that contributed to the implementation of this event. Finally, congratulations to attend the conference and enjoy a great memorable time in Yogyakarta.

Wassalaamu'alaikum warahmatullahi wabarakatuh
Yogyakarta, 4th January 2014
Chairperson of The Organizing Committee

Azis Ikhsanudin, M.Sc., Apt

Welcome Address from Rector of Ahmad Dahlan University

Assalamu'alaikum wr.wb.

It is a great pleasure for me to get an opportunity to deliver welcome address in the **International Conference on Restorative Justice for Costumer Protection: Law and Pharmacy Perspective**. One good thing in this International Conference is that it is hosted by a joint-committee: Law Faculty and Pharmacy Faculty of Ahmad Dahlan University under the Steering Committee of the 53rd Anniversary of Ahmad Dahlan University bringing an issue on Restorative Justice for more Harmonious Indonesia. This is, of course, a great and hot issue as it is a kind of correction toward the positive law working today. By Restorative Justice the burden of the law enforcement apparatuses would be greatly reduced including the burden of the jails that are mostly over capacity today, because the concept of Restorative Justice enables the solution of law conflicts outside the formal court via mediators. The concept of restorative justice can also reduce the abuse of law apparatuses power and ensure the justice for offenders as well as the victims. To succeed this concept, it needs the roles of both traditional and religious institutions by maximizing the conduct norms existing in the society.

In general what is meant by consumer including all people. Consumer is the largest economic group in the economy, which is affecting and effected by almost every public and private economic decision. Two-thirds of all spending in the economy is by consumer, but unfortunately consumer as the important group in the economy is not effectively organized, and the views of this group are often not heard. The consumer becomes the object of the business activities whose main intention is to get the highest profit through the promotion, sales, as well as the application of the standard agreement violating the consumers' rights. This situation happens in the health field as well. Various problems related to the consumer protection still emerge in the medicine field in Indonesia, such as: limited medicine information accepted by the patients, which could bring a fatal impact for the patients' health. Therefore, the objective of this international seminar is to understand patients' or consumers' right in getting their protection from the perspective of law and pharmacy.

On this Occasion, on behalf of Ahmad Dahlan University, I also especially welcome and highly appreciate all the invited speakers: **Prof. dr. Ali Ghufroon, M.Sc, Ph. D**, Deputy Health Minister Of Republic Indonesia as Keynote Speaker, **Dr. (Jur). Nils Wagenknecht** as Director of DAAD, Germany, **Dr. Syed Azhar Syed Sulaiman (Assoc. Prof.)** from School of Pharmaceutical Science, University Sains Malaysia, Penang Malaysia, representatives from **YLKI (Indonesian Consumer Foundation)** and **Dr. Dyah Aryani Perwitasari, M.Si., Ph.D.**, Aptas Clinical Pharmacy Department of Universitas Ahmad Dahlan, Indonesia, as well as selected paper presenters for their sharing valuable times and ideas so that this conference becomes an auspicious moment.

Last but not least, we hopefully wish the harmonious relationship between the victims and the offenders of the law conflicts including their families as the Restorative Justice final goal based on win-win solution could be successfully achieved.

Finally, by reciting *Bismillahirrahmanirrahin*, herewith I declare that international Conference on Restorative Justice for Costumer Protection: Law and Pharmacy Perspective is officially opened.

That's all, Thank you.

Yogyakarta, January 4, 2014

Dr. Kasiyarno M.Hum.

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ABSTRACT

Background: Changes in lifestyle and eating habits of modern society and the low activity of the body and fiber consumption causes excessive formation of cholesterol. Lemongrass is used by society to decrease blood cholesterol content drugs and based on previous research showed the fact that *Citrus aurantifolia* Swingle can reducing the effect of total cholesterol content.

Objective: The Research was conducted to determine the effect of infusion of lemongrass and water lemon on cholesterol levels total to male Wistar rat with induced quail eggs. This study is an experimental research design using pre-post test randomized control group design that is with measurement before and after treatment.

Methods: The measurement of total cholesterol concentration was analysed using Test Easy Touch. Determination of total cholesterol carried in the period I (initial cholesterol levels after adaptation), period II (total cholesterol levels after the induction of quail egg yolk), and period III (after treatment). The collecting data are tested by Kolmogorov-Smirnov, Levene, Kruskal-Wallis and Man Whitney test with level of significance of 95%.

Outcome Measured: the levels of total cholesterol.

Results: The results showed there were significant differences in total cholesterol treatment of group 1 and 2 with a control Positive group. Based on the results of the research it can be concluded that the combination of lemongrass infusion and water lemon could decrease the levels of total cholesterol male Wistar rat with induced quail egg yolk. A decrease in the levels of total cholesterol in the The combination of lemongrass infusion and water lemon dosage 1,5 ml/200 g BW, and 3 ml/200 g BW consecutive is 20,41% and 28,51%.

Conclusion: In conclusion, the combination of lemongrass infusion and water lemon could decrease the levels of total cholesterol male Wistar rat with induced quail egg yolk.

Keywords: Lemongrass, *Citrus aurantifolia*, quail egg yolk, total cholesterol.

INTRODUCTION

Household Health Survey conducted by the Ministry of Health shows the prevalence of cardiovascular disease in Indonesia from year to year increase, followed by an increase in the number of deaths. The increase in prevalence is due to the improvement of living standards, especially lifestyle change diet (Sudarmanto, 2006). Changes in lifestyle and eating habits of modern society also the low activity of the body and fiber consumption causes excessive formation of cholesterol in the body, giving rise to conditions of hypercholesterolemia (Dalimartha, 2001).

Prolonged hypercholesterolemic conditions can lead to atherosclerosis which can lead to coronary heart disease. Coronary heart disease occurs if the situation occurs in the blood vessels of the heart (coronary), so that the blood flow to the heart muscle and increasingly insufficient oxygenation to the heart muscle metabolism. In more severe conditions of the heart's ability to pump blood can be lost. This will damage the system controller cardiac rhythm and ended in death (Sudarmanto, 2006). The high death rate from heart attacks in Indonesia is very unfortunate given the actual treatment of coronary heart disease is of increasing good, effective, and efficient (Anonymous¹, 2006).

Nowadays people are more selective in the selection of treatment both in price, as well as drug content and drug side effects. Therefore, people are looking for alternative treatments that are safe and inexpensive as using ingredients derived from nature, in Indonesia, often called traditional medicine (Dalimartha, 2008).

Lemongrass plants known to be effective in reducing blood pressure, stimulates blood circulation and removes blood pressure problems. One of the most important health benefits of lemongrass is to lower LDL cholesterol levels in the blood (Anonymous, 2009). According to Costa et al. (2011), lemongrass essential oil can reduce blood cholesterol levels and reduce the toxic and genotoxic effects in mice given 21 days

after oral intake of essential oils. Among the natural ingredients that have been traditionally used for the treatment is lemon. In lime juice is said to contain vitamin C and fiber. Reported that vitamin C antisklerotik powerless because it can mobilize and transport of cholesterol in the arteries in the heart, here vitamin C stimulates recast to bile acids (Tjay and Prog, 1986). Lemon juice also contains vegetable fiber that absorbs bile acids, and then removes it through the feces. Without these bile acids, cholesterol and other lipid resorption is greatly reduced, to levels of cholesterol and other lipids greatly reduced, to levels of cholesterol and lipids in the plasma down (Tjay and Prog, 2002). Therefore, the content of vitamin C and fiber that orange juice be used as an alternative material that is used as a decrease in total cholesterol levels. Fresh lemon juices at a concentration of 100 % v / v were able to reduce total cholesterol (Agustriantoni and Rusmawati, 2004). Therefore, other studies need to be conducted to determine the ability of lemongrass and lime juice in lowering total cholesterol levels.

MATERIALS AND METHODS

Materials

The main test material used is lemongrass and lime juice obtained from Yogyakarta Bringharjo Market. Reference compounds were used as positive controls were obtained from the pharmacy simvastatin UAD and as a negative control was 1 % Na CMC obtained from the Laboratory of Pharmacology UAD. Test animals used were rats *Rattus norvegicus* white male Wistar species with initial body weight of 150-200 grams \pm 2 months old and healthy LPPT obtained from UGM.

The tools used in this study is the infusion pan, water bath, filter, camera, weighing animals, oral syringes, analytical gram scales, mortars, stamfer, glass beaker, pumpkin drinks, Pasteur pipette, stir bar, knife, stop watch, Easy Touch and cholesterol strips.

Methods

Preparation of Lemongrass and Lime Juice Water
 Infuse combination of lemongrass and lemon juice given at a dose of 1.5 ml/200g BB, 3 BB ml/200g BW rats.

Making Water Infuse Lemongrass and Lime Juice

Lemongrass washed, cut into pieces then weighed and lemongrass infusion made 20 % (20 g/100 ml), 20 % have been the greatest percentage that is expected to give greater effect. Then put in a pan infusion containing 120 ml of distilled water and then heated to a temperature of 90 ° C after waiting for 15 minutes then diserkai after cold flannel until a total volume of 100 ml, then added lemon juice to volume ratio (1:1). Cut lemon and the juice is then mixed with water taken into the lemongrass infusion as much as 0.75 ml to 0.75 ml infusion of lemongrass and lime juice (1.5 ml/200 GBB) and 3 ml/200 GBB mice (1.5 ml infusion of lemongrass : 1.5 lime juice) for 7 consecutive days, as many as 2 x daily.

Feed the manufacture of high -cholesterol diet

Making feeding a high cholesterol diet in a way given that quail egg yolk emulsion homogeneous whipped and fed standard AD 2 for 5 consecutive days by 2 x daily (3 ml).

Preparation of CMC Na 1 %

Na CMC 1% is made by weighing 1 gram CMC Na, crushed in a mortar with hot water little by little until dissolved, then put in a pint flask to 100 ml.

Determination of drug dosage and manufacture of simvastatin suspension 0.01 %w/v

Simvastatin suspension 0.01 %w/v made in the following manner:

Simvastatin human dose for 60 kg = 10 mg
 Converting human dose to mice = 0.018

Calculation of dose conversion between types of animals

Then the dose to rats (200 g) is as follows :

$$\frac{70\text{kg}}{\text{BW}} \times \frac{60\text{kg}}{10\text{mg}} \times 0.018 = 0.21 \text{ mg/200 g}$$

$$\text{Rats} = 1.05 \text{ mg / kg}$$

The volume of oral administration in rats of 200 grams is 2 ml, then the conversion of simvastatin was made are as follows:

$$\text{VAO} = (\text{D} \times \text{B}) / (\text{drug concentration})$$

$$2 \text{ ml} = (1.05 \text{ mg/kg} \times 0.2 \text{ kg}) / (\text{drug concentration})$$

Concentration = 0.105 mg / mL
 = 1.05 mg/10 ml
 = 0.01 % w / v

Take 1 tablet of simvastatin, shear zones and stations. Suppose weighing 330.4 mg, then weighed as much:

$$(1.05 \text{ mg}) / (10 \text{ mg}) \times 330.4 \text{ mg} = 34.69 \text{ mg}$$

34.69 mg Na CMC suspended in 1% ad 10 ml.

Determination Method of Cholesterol Levels Using Easy Touch

This tool is the same principle as CHOD - PAP enzymatic method because this tool is contained in the enzyme cholesterol oxidase, cholesterol esterase, 4 - Aminoantipirin and peroxidases that its mechanism of action similar to the method Enzymatic Photometric Test with Cholesterol Oxidase Phenol Aminoantipyrin (CHOD - PAP), with using rat blood taken via the tail vena caudalis Wistar rats.

Data analysis

Preliminary test with Kolgomorof - Smirnov test to check the normality of the data and Levene test for homogeneity of the data see. If the data were normally distributed and homogeneous tested ($P > 0.05$), then followed by a parametric test with one -way ANOVA to determine whether there are differences in the test group. If the Kolgomorov - Smirnov test and Levene test data obtained are not normally distributed and homogeneous ($P < 0.05$), then proceed with a non- parametric test Kruskal-Wallis test to determine whether there are differences in the

test group, followed by Mann Whitney test to locate significant differences between groups.

RESULTS AND DISCUSSION

Orientation was conducted to determine how the combination infusion at a dose of lemongrass and lime juice effect. Once oriented to the provision of 1 x daily dose of 1.5 ml/200 g BW or 3 ml/200 g BW rat apparently not lower cholesterol to a normal state, sehingga we give the dose 2 times a day for 7 consecutive days in order to get effect of decreasing the maximum. Total cholesterol levels were measured using a blood cholesterol measuring device Easy Touch.

Determination of total cholesterol carried in the blood of male Wistar rats were divided into three periods, namely the period of the first (initial cholesterol levels after adaptation), period II (total cholesterol levels after induction of quail egg yolk), third period (after treatment combinations). Results purata complete total cholesterol levels can be seen in Table I.

Based on Table I shows that the administration of a quail egg yolk diet hiperkolesterolemia thus raises total blood cholesterol levels of the mice increased. It can be seen clearly in the second period on each - each group treated quail egg yolk diet showed elevated levels of total cholesterol. In the third period average - average total cholesterol levels decreased, especially in group II, III, and IV. This shows that administration of a combination of infusion of lemongrass and lime juice can lower total cholesterol levels, which means that the plant lemongrass and lime have antihiperkolesterolemia effects.

Table I. Results purata total cholesterol (mg/dl) of each group in each period

Group	Purata cholesterol ($\bar{x} \pm SD$) [mg / dl] in the period to :		
	I	II	III
I	123,0 \pm 5,66	189,6 \pm 8,44	180,2 \pm 8,93

II	123,2 \pm 5,93	184,4 \pm 8,56	123,0 \pm 5,38
III	125,0 \pm 6,08	185,2 \pm 7,98	147,4 \pm 7,27
IV	124,0 \pm 3,16	182,4 \pm 8,62	130,4 \pm 4,33

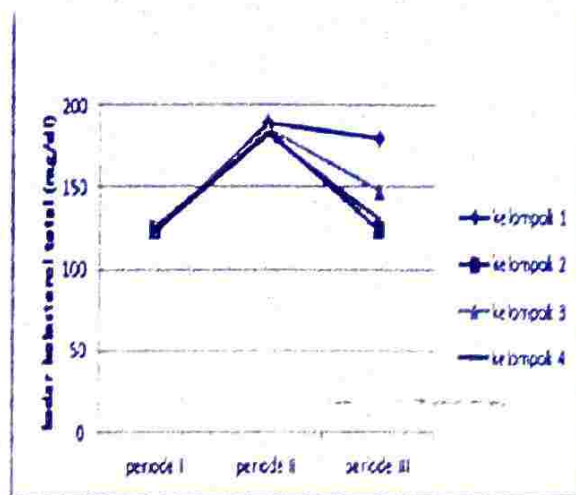


Figure 1. Relationship Graphs purata observation time with total cholesterol levels

Graph showing the relationship between the observation time purata total blood cholesterol levels showed that elevated levels of total blood cholesterol occurred in each group in the second period. In the third period, a decrease in total blood cholesterol levels are pretty extreme occurred in group II as a positive control and in group III, IV infusion treated with a combination of lemongrass and lime juice.

Kolmogorov Smirnov test results, the data were not normally distributed $p < 0.05$ is equal to 0.005. While the values obtained Levene test $p > 0.05$ is equal to 0.839 which means that the data is homogeneous. Subsequent data analysis using non-parametric methods by Kruskal-Wallis test and Mann - Whitney test.

To see the effect of a decrease in total cholesterol levels due to administration of a combination of infusion of lemongrass and lime juice calculated difference in total cholesterol levels after 7 days of treatment

(period III) to total cholesterol levels after a high-cholesterol diet (period II).

Based on the calculation of the difference between periods I and II, it can be concluded that the effect of the decrease in total cholesterol levels are those of the second group were given a diet that is high cholesterol or dietary fat and simvastatin of 61.2 mg / dl at 7 days after treatment. While the combination treatment infusion of lemongrass and lime juice in a dose of 3 ml/200 g BW mice have the greatest effect of decreasing after 7 days of treatment at 52 mg / dl compared with a dose of 1.5 ml/200 g BW rat is equal to 37.8 mg / dl. It is appropriate to expect that the greater the dose the greater the effect of a decrease in total cholesterol levels. After that, to see a comparison of the decline in total cholesterol levels between groups in the third period of the Mann-Whitney test. It can be concluded that the administration of simvastatin (group II) can reduce total cholesterol to a normal state. This is as expected because of simvastatin as an anti-hypercholesterolemia. Between group I with group II, III, and IV differ significantly, meaning the effect of a decrease in total cholesterol levels in group I than in group II is smaller, III, and IV. While inter-group II with group 3 was significantly different with a greater difference in the group given simvastatin means the group given simvastatin has the effect of a decrease in total cholesterol levels were large, while between groups II and IV groups did not differ significantly. This suggests that the combination of infusion of lemongrass and lime juice with a dose of 3 ml/200 g BW has the effect of lowering total cholesterol levels similar to the positive control is simvastatin. It is also proved that the combination of infusion of lemongrass and lime juice has a good ability in lowering total cholesterol levels in the blood. Therefore, in the treatment of hypercholesterolemia simvastatin can be combined with infusion of lemongrass and lime juice.

Table II. Data percentage reduction in cholesterol levels each treatment group

Groups	% decrease in cholesterol levels $\left(\frac{P_{II} - P_{III}}{P_{II}} \times 100\% \right)$
I	4,96
II	33,29
III	20,41
IV	28,51

Description

P_{II} : Total Cholesterol Levels II period each group

P_{III} : Total Cholesterol Levels II period each group

The combination of infusion of lemongrass and lime juice has considerable ability in lowering total cholesterol levels, especially in combination infusion of lemongrass and lime juice with a dose of 3 ml/200 g BW is equal to 28.51 %. The combination of infusion of lemongrass and lime juice with a dose of 3 ml/200 g BW rat is the greatest combination in lowering total cholesterol levels.

It is also proved that the combination of infusion of lemongrass and lime juice has a good ability in lowering total cholesterol levels in the blood. Ability antihypercholesterolemia or lemongrass infusion antihyperlipidemia combination of lemon juice and comparable with levels. This means that the greater the dose, the greater the provision percent reduction in total cholesterol levels. It also occurs in the same study related total cholesterol using quail eggs inducer but only use lemon juice shows that lemon juice can reduce total cholesterol white male Wistar rats at a dose of 15 ml / kg equivalent to 3 ml/200 g BW is equal to 31.61 %, and lemon juice dose of 7.5 ml / kg equivalent to 1.5 ml/200 g BW is equal to 9.27 %. Lemon juice dose of 15 ml / kg equivalent to 3 ml/200 g BW simvastatin and 1.05 mg / kg showed the effect of a decrease in total cholesterol levels were the same. This proves that the combination of infusion of

lemongrass and lemon juice can reduce total cholesterol.

It is estimated that the compound has an effect on the infusion of lemongrass is antihiperkolesterolemia sitral . Mechanism of action of citral in lowering cholesterol levels which stimulates blood circulation , thereby reducing the deposition of fat in the blood vessels and stimulates the secretion of bile so that cholesterol will come out with the bile into the intestines and then dumped (Tut Martiana Luh , 2008) . The ability of lemon juice in lowering total cholesterol allegedly because the role of flavonoids and fiber . Flavonoids work as lowering cholesterol synthesis by inhibiting 3 - hydroxy - 3metilglutaril coenzyme A (HMG - CoA) reductase, thereby disrupting the conversion of HMG - CoA reductase into mevalonate (Chen *et al .* , 2001). While the fiber content can absorb excess fat , cholesterol and some other hazardous materials that enter the stomach , and fiber also has the ability to bind bile acids , bile acid is the end product of cholesterol metabolism the more fiber that binds to cholesterol is metabolized more cholesterol levels so as cholesterol down (Diehl , 1995) . While vitamin C antisklerotik powerless because it can mobilize and transport of cholesterol in the arteries in the heart , here vitamin C stimulates recast to bile acids.

CONCLUSION

The combination of infusion of lemongrass and lime juice can lower total cholesterol levels of male Wistar rats induced quail eggs. The decrease in total cholesterol levels of mice on a combination of infusion of lemongrass and lime juice 1.5 ml/200 g BW dose and dose 3 ml/200 g BW , respectively, 20.41 % and 28.51 % .

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