

# Sistematika Proses Pemasukan (*Submission*) Artikel hingga Terbit (*Published*) pada *International Journal on Advanced Science, Engineering and Information Technology (IJASEIT)*

## JUDUL PAPER The Mixture of Yogurt And Strawberry Juice To Repair Blood Lipid Profile

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The Mixture Of Yogurt And Strawberry Juice To Repair Blood Lipid Profile

RINCE ALFIA FADRI, NURMA FATHI FATHI LAGI, dan NURMA SYARIH

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Faculty of Agriculture, University of Indragiri

Faculty of Agricultural Technology, University of Andalas, Padang 25163, Nat. Sumatera, Indonesia

Abstract — There are a many ways to do in reducing cholesterol concentration in blood. Yogurt and strawberry juice have ability to repair blood lipid profile or hypercholesterolemia. Research and scientific development attention on the cholesterol-lowering products that to be mixed with strawberry juice is necessary to do to support community health. The purpose of this research was measuring the mixture of yogurt and strawberry juice effectiveness to repair blood lipid profile. The design of this research that to be used was experimental by pretest and posttest, divided into two randomized control design groups. The number of the research was 40 people who were female. Characteristics: cholesterol (total, HDL, LDL, and TG) to be analyzed by SPSS 20.00 software (Classical Statistics) software. The result after giving mixture of yogurt and strawberry juice with the dosage 2ml and 3ml per day could decrease cholesterol LDL, total lipids, cholesterol total and to increase HDL, total lipids. The effectiveness in this giving observed increasing reduction result (p<0.05). Conclusion, the mixture of yogurt and strawberry juice could repair blood lipid profile, when it's proved to reduce effectively cholesterol Total Lipid, LDL, and TG.

Keywords—Yogurt; Strawberry Juice; Lipid Profile; Hypercholesterolemia

Some media mentioned that Misang Ethnic eat the lipid-lowering in hypertension and cholesterol. Misang of rat palm. According to Health Literability Kota Gede after (Cholesterol) cholesterol compounds (2008) hypercholesterolemia number was 14.4% for women and 12.0% for men. This condition was 13.3% for women and 14% for men. The prevalence of community good culture rejection one of them is health and nutrition. Strawberry (Fragaria ananassa), is a fruit plant that has low health risk score per day. Several phytonutrient compounds that was found in strawberry fruit are antioxidants and flavonoid, anthocyanin, isoflavone and terpenoid. One of the strawberry's function is an antioxidant in the body to avoid atherosclerosis. Antioxidant needs to keep cholesterol process by oxidize the LDL.

Gambar 1. Pengiriman Manuscript, Hari Jumat 5 September 2014 Jam 19.57 WIB

## 2. Manuscript

### **The Mixture Of Yogurt And Strawberry Juice To Repair Blood Lipid Profile**

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**Abstract** — There are so many ways to do in reducing cholesterol concentration in blood. Yogurt and strawberry juice have ability to repair blood lipid profile at *hypercholesterolemia*. Research and *lactobacillus* development potentiation as the cholesterol killing probiotic that to be mixed with strawberry juice is necessary to do to support community health. The purpose of this reasearch was measuring the mixture of yogurt and strawberry juice effectiveness to repair blood lipid profile. The design of this research that to be used was experimental by pretest and posted randomized control design progam. The sample of this research was *thirty* white mice (*Rattus Norvegicus*). Cholesterol Total, HDL and LDL to be analyzed by WI-M-KK2 BLK-SB methode (Clinical Chemistry Auto Analyzer) using tool Selectra E Auto Analyzer. The data was analyzed by Anova test, continued by LSD test using computer program . The result after giving mixture of yogurt and strawberry juice with the dosage 2ml and 3ml per day could obviously reduce LDL Level ( $p < 0,05$ ), Cholesterol Total ( $p < 0,05$ ) and to increase HDL Level ( $p > 0,05$ ). The differentiation in dosis giving showed unmeaning reduction result ( $p > 0,05$ ). Conclusion, the mixture of yogurt and strawberry juice could repair blood lipid profile, where it's proved to reduce drastically choleterol Total Level, LDL in 30 days.

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#### I. INTRODUCTION

Some media mentioned that Minang *Ethnic* occupy the highest position in hypertension and cholesterol because of its eat pattern. According to Health Limapuluh Kota district office (*Dinas Kesehatan Kabupaten Limapuluh Kota*) (2005) *hypercholesterolemia* number was 14.4% for women and 12,4% for men. This incident rose to 16,2% for women and 14% for men. The prevalence of community *hypercholesterolemia* reached 200-248 mg/dl. Young generation sufferer in the age of 25-34 years reached 9,3%. Women was being the most suffered in this case which's 14,5 % or almost twice as men group. A person has high risk affected by coranary heart desease (*PJK*) if cholesterol total concentration more than 240mg/dl, the LDL (Low Density Lipoprotein) plasma cholesterol more than 160 mg/dl and HDL cholesterol (High Density Lipoprotein) less than 35 mg/dl [1].

Many ways that can be used to reduce cholesterol concentration in the blood. Some studies indicated the *Lactobacillus* that is transferred from the media of laboratory (in vitro) into the body (in vivo properties) has the potential to reduce cholesterol in the blood [2]. The Mixture of yogurt and strawberry juice have ability to repair blood lipid profile [3]. Yogurt is one of probiotics dairy products drinks which are processed through the process of fermentation by adding good cultures organism, one of them is lactic acid bacteria. Strawberry (*Fragaria chiloensis*) is a fruit herb plant that has two hundred tiny seeds per one fruit. Several phytochemical compounds that was found in strawberry fruit are *antosianin*, *acid elagiat*, *katekin*, *kuaerferin* and *kaemferol*. One of

the *antiosianin* function is as antioxidants in the body to avoid *atherosclerosis*. *Antiosianin* works to hamper *aterogenesis* process by *oxidize* the LDL.

Research and development of *Lactobacillus* potential as probiotic cholesterol reductant mixed with strawberry juice need to be done to support community health. The purpose of this reasearch was measuring the mixture of yogurt and strawberry juice effectiveness to repair blood lipid profile.

## II. METHODE

Research design to be used was experimental by *pretest and posted randomized control design*. This design was used to measure treatment effect in the experimental group by comparing that group with control group. This research sample was thirty white mice (*Rattus Norvegicus*). The sample divided to be six groups, one negative control group, one positive control group and four treatment groups. Sample size in this research was five mice for each group. Giving mixture of yogurt and strawberry juice was done per oral by *gavage* for about thirty days. *Selectra E Autoanalyzer* was the tool used to examine cholesterol total, Cholesterol LDL, and Cholesterol HDL in the blood. *Sonde needle* was used to inject yogurt and strawberry juice through experimental mice with the dosage 2 ml and 3 ml per day.

The materials used were standard feed at the rate of 20 gr/tail/day, *hypercholesterolemic* feed as additio feed to increase mice's cholesterol level exogeneously in order to reach *hypercholesterolemia* condition. Feeds with the cholesterol composition 1,5% goat fat, cooking oil 6 % and standard feed till 100 %. All the materials were stired up untill well mixed and transformed to be *pelet* form like standard feed [4]. Hypercholesterolemia condition to the mice could be reached by giving addition food in high cholesterol level for thirty days.

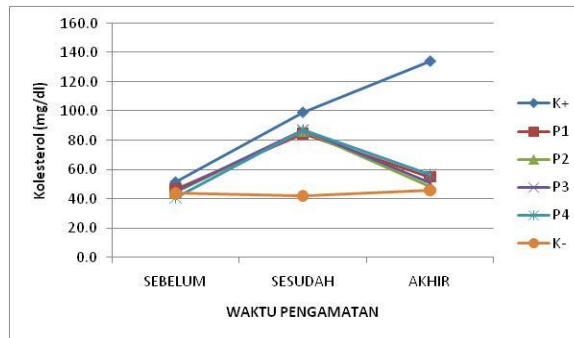
Cholesterol total, HDL and LDL analyzed using WI-M-KK 2 BLK-SB methode (*Clinical Chemistry Autanalyzer*) and the tool used was calibrated *Selectra E Autoanalyzer* at UPTD, West Sumatera Province Health laboratory. To measure the effect of giving yogurt mixture and strawberry juice to the blood lipid profile was done One Way Anova examine using statistix 8 software and to make diferenciate for each treatment was done Least Significant Defference (LSD) on trusted degree 95% ( $p < 0,05$ ).

## III. RESULT AND DISCUSSION

*Hypercholesterolemia* condition reached by giving *hypercholesterolemic* feed for thirty days. Cholesterol level increasing may caused by three things. First, diet contained much cholesterol and fat so that body has no ability to control it. Second, Cholesterol excretion to the colon trough by little gall acid. Third, in case when the cholesterol production in the liver in great quantities [5].

Mice's cholesterol level increasing by the time yogurt and strawberry juice giving caused by *hypercholesterolemic* feed. It's encourage over cholesterol forming that influantial to cholesterol increasing in the blood. Goat fat that was got by frizzling was oxidated fat product. Oxidation fat product got into the body and to be in the blood lipoprotein as oxidated cholesterol. Low Density Lipoprotein (LDL) brought oxidated cholesterol in form of *modified-LDL* [5]. Increasing cholesterol in the research probably caused by oxidated cholesterol increasing that contained in the LDL. High cholesterol total could be reduced by yogurt and strawberry juice giving for thirty days. Mixed yogurt and strawberry juice giving drastically imroved blood lipid profile of white mice. Average cholesterol level increasing after hypercholesterolemic feed giving and reduction cholesterol total level after yogurt giving, strawberry juice also yogurt mixed and strwaberry juice is seen on Picture 1. In the other side mixed yogurt and strawberry juice giving, cholesterol LDL level (mg/dl) on the average before and after yogurt giving to the white mice treatment, strawberry juice also yogurt and strawberry juice for each treatment group had real reduction compared with positive control. Cholesterol LDL reduction is showed on the picture 2.

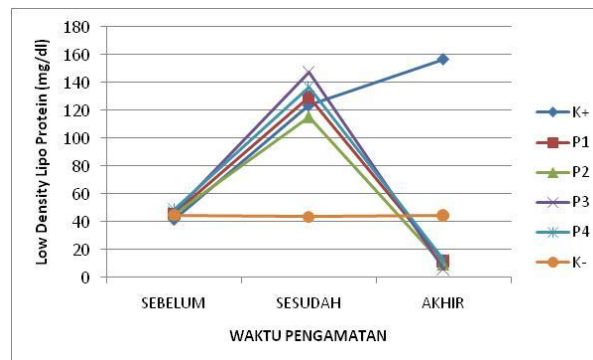
Yogurt giving, strawberry juice also mixed yogurt and strawberry juice gave the same effect to cholesterol LDL reduction where for each group treatment was not real different. This proved that by just yogurt giving , just strawberry juice or both of them could reduce drastically cholesterol LDL of white mice.



Picture 1. The Grafik of Cholesterol Total Level Average (mg/dl) of white mice

Sebelum / Before : Cholesterol total level before hypercholesterolemic feed giving  
 Sesudah / After : Cholesterol total level after hypercholesterolemic feed giving and before yogurt and strawberry juice treatment.

Akhir/End : Cholesterol total level of white mice after yogurt and strawberry juice treatment.



Picture 2. The Grafik of Cholesterol LDL Level Average (mg/dl) of white mice

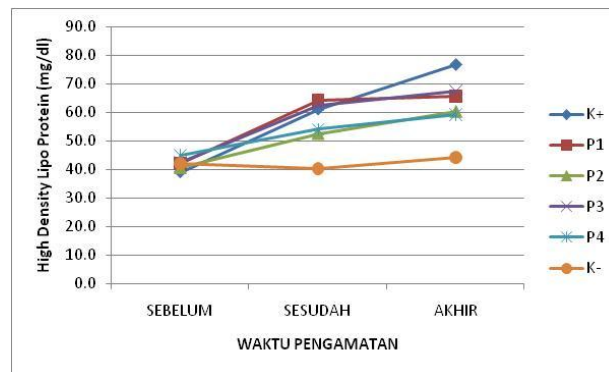
Sebelum/Before : Cholesterol LDL level before hypercholesterolemic feed giving  
 Sesudah/After : Cholesterol LDL level after hypercholesterolemic feed giving and before yogurt and strawberry juice treatment.

Akhir/End : Cholesterol LDL level of white mice after yogurt and strawberry juice treatment.

Cholesterol LDL level after yogurt and strawberry juice giving to the white mice is showed on the picture 3. White mice's cholesterol LDL level on the end treatment a little bit increased where the increasing for reach group showed not real different. If to be compared with negative control group showed real different, and so positive control group.

The other mechanism may happened is there's cholesterol assimilation activity by *Lactobacillus casei* strain Shirota bacteria. According to reference [5], research result after fermentation milk giving contained *Lactobacillus casei shirota* gives effect to real reducing on cholesterol total and cholesterol LDL. This blood cholesterol level reducing caused by BAL ability that's *L.casei* in cholesterol. Assimilation. *L. Casei* will take or absorb the cholesterol and next the cholesterol will collect together to be

one on bacteria cellular membran, so that the bacteria is more endure to the lisy. The consequence of diet cholesterol absorption from digestion system, cholesterol level in the blood will also to reduce.



Picture 3. The Grafic of Cholesterol HDL Level Average (mg/dl) of white mice  
 Sebelum/Before : Cholesterol HDL level before hypercholesterolemic feed giving  
 Sesudah/After : Cholesterol HDL level after hypercholesterolemic feed giving and before yogurt and strawberry juice treatment.  
 Akhir/End : Cholesterol HDL level of white mice after yogurt and strawberry juice treatment.

In the strawberry juice contained antosianin that has function as the antioxidant in the body so that it can prevent ateroklerosis occurred, the blood vessels clogging disease. Antosianin works to prevent aterogenesis process by oxydizing LDL. Antosianin also protects endotel cell integrity that covering the vessels walls so no damage occurred. Endotel cell damage is the beginning of ateroklerosis forming so it needs to be avoided. In the other hand, in the strawberry juice contains high vitamin c to increase HDL level that will sweep cholesterol LDL out, to increase throwed cholesterol speed in gall acid, prevent LDL oxydation so it helps preventing plaque formed on the vessels that may cause heart vessels to be clogged. Next it has function as pulmer so that increasing feces banishment where this case also to reduce reabsorption gall acid and its conversion to be cholesterol (Kurowska, 2002). So based on this research to get maximal healthy advantages from foods, no wrong if applying synergy foods concept in daily menu. Optimal healthy advantages will be not reached if only stocked-still to certained nutrition supplement consumption. Various healthy food combination is a good solution to get helthy life. By running food synergy concept will be got many advantages like optimal nutrition food absorption, hungry controlling and body weight also to reduce cholesterol level and to maintan cholesterol level in normal condition.

Beside clinical aspect to reduce cholesterol level, many things that we can see from this research just like functional foods combination that will produce positive synergy or foods synergy in the development of foods and nutritions. So far, we just always be stunned to one kind of food component advantage. Like suggestion to consume vitamin c to keep body stay healthy or much zinc consumption to prevent anemia or to eat one kind of antioxidant to avoid free radical. But, by food pattern changing around with new paradigma to move to functional foods, perception mistakes that to consume supplement like certain nutritions hopely can be protected from deseases attack can be muffled. From the research result can be proved that a certain nutrition work ability needs interaction with others nutrition in order that give maximal advantages. sExcept that certain kinds of food combination like yogurt and strawberry juice can to increase the advantages of that food by consume it togetherly.

#### IV. CONCLUSIONS

The Mixture of yogurt and strawberry juice can repair blood lipid profile, where it is proved to reduce drastically cholesterol total level, LDL in thirty days. Continuation reasearch is needed about antioxidant activities in strawberry and to examine any compounds that dominantly most in reducing cholesterol level.

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**REVIEW FORM**

7<sup>th</sup> September 2014  
Ref. No. 19/ReV/IJASEIT/II/2014

Dear **Rince Alfia Fadri**  
Food Technology Politeknik Pertanian Negeri Payakumbuh, Indonesia  
Corresponding Author : alfiarince@gmail.com

Title:	The Mixture of Yogurt And Strawberry Juice To Repair Blood Lipid Profile
Author(s):	Rince Alfia Fadri, Rilma Novita ,Fadil Oenzil, and Kesuma Sayuti
Paper-ID	386

**A. Technical aspects**

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**B. Communications aspects**

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| 2. The figures are clear & do clearly convey the intended message. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 3. The length of the paper is appropriate.                         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |



### C. Comments to the authors (You may use another sheet of paper.)

Thank you very much for the submission through the online system. The manuscript has been reviewed. Please look into this and resubmission your manuscript after revision. Please find the revision in the attachment!

**The novelty:** The Mixture of yogurt and strawberry juice can repair blood lipid profile, where it is proved to reduce drastically cholesterol total level, LDL in thirty days. Research result after fermentation milk giving contained *Lactobacillus casei shirota* gives effect to real reducing on cholesterol total and cholesterol LDL. This drink is a choice of functional drinks

**The Title:** The **title** summarizes the main idea or ideas of your study. A good **title contains** the fewest possible words that adequately describe the contents and/or purpose of your research paper. The **title** is without doubt the part of a paper that is read the most, and it is usually read first. The title of this paper is good and informative.

**The abstract:** has already explained, "What is the importance of research". [An abstract should be between 150-250 words.]. Please improve the English, use simple sentence and provide the implication of research.

#### *Abstract*— **ABSTRACT**

Abstract – There are so many ways to do in reducing cholesterol concentration in blood. Yogurt and strawberry juice have ability to repair blood lipid profile at hypercholesterolemia. Research and lactobacillus development potentiation as the cholesterol killing probiotic that to be mixed with strawberry juice is necessary to do to support community health. The purpose of this reasearch was measuring the mixture of yogurt and strawberry juice effectiveness to repair blood lipid profile. The design of this research that to be used was experimental by pretest and posted randomized control design program. The sample of this research was thirty white mice (*Rattus Norvegicus*). Cholesterol Total, HDL and LDL to be analyzed by WI-M-KK2 BLK-SB metode (Clinical Chemistry Auto Analyzer) using tool Selectra E Auto Analyzer. The data was analyzed by Anova test, continued by LSD test using computer program. The result after giving mixture of yogurt and strawberry juice with the dosage 2ml and 3ml per day could obviously reduce LDL Level ( $p < 0,05$ ), Cholesterol Total ( $p < 0,05$ ) and to increase HDL Level ( $p > 0,05$ ). The differentiation in dosis giving showed unmeaning reduction result ( $p > 0,05$ ). Conclusion, the mixture of yogurt and strawberry juice could repair blood lipid profile, where it's proved to reduce drastically choleterol Total Level, LDL in 30 days.

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**The Introduction** The results of this study are presented with the aim of introducing oneself to readers and attracting their attention. The attractiveness, clarity, fun and analytical capacity of the presentation will encourage the reader to read the article. The Introduction typically occupies 10-15% of the paper. The introduction should consist of two parts: It should include a few general statements about the subject to provide a background to your paper and to attract the reader's attention. It should try to explain why you are writing the paper. The introduction section has included a general introduction, problem definition, problem solution, study motivation, aims and objectives, gaps in the literature.

Noted: Please clearly mention the objective of study in Introduction. It is useful to analyze the issues to be considered in the 'Introduction' section under 3 headings. Firstly, information should be provided about the general topic of the article in the light of the current literature which paves the way for the disclosure of the objective of the manuscript. Then the specific subject matter, and the issue to be focused on should be dealt with, the problem should be brought forth, and fundamental references related to the topic should be discussed. Finally, our recommendations for solution should be described, in other words our aim should be communicated. Add some recent literature to strengthen the need for this research to be carried out

**The Materials and methodology** The methods have described how the research question was answered, explain how the results were analysed.

Noted: Make the materials and methods more detailed, so others can also do the same. How to determine added value also needs to be explained.

**Results and Discussion** have included findings, comparison with prior studies, causal arguments, and deductive arguments.

**Noted:**

1. You should report all relevant results concisely and objectively, in a logical order. Don't include subjective interpretations of why you found these results or what they mean—any evaluation should be saved for the [discussion section](#).
2. When conducting research, it's important to report the results of your study prior to discussing your interpretations of it. This gives your reader a clear idea of exactly what you found and keeps the data itself separate from your subjective analysis.

**Reference:**

The author has added references to the publication, which has been published for the past three years, according to the reviewer's advice. **Please make sure that the format of "Index Terms" is correct.**

**Decision:** As a result of research with an appropriate methodology, **this paper is ACCEPTED for publication with minor revision.**

**Additional Comments:**

There are some grammatic mistakes and some mistakes in Punctuation. Please revise the Table numbers

**D. Recommendation** (Tick one)

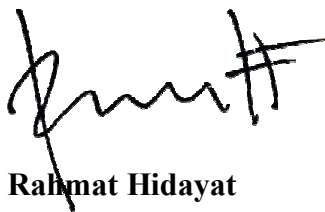
1. Accepted without modifications.
2. Accepted with minor corrections.
3. Accepted with major modification.
4. Rejected.

**E. Comments to the editors** (These comments will not be sent to the authors)

Please makes sure that all reviewers comment already answered by the author and fixed it in the manuscript.

Sincerely,

Regards,



**Rahmat Hidayat**

Editor in Chief  
International Journal on Advanced Science,  
Engineering and Information Technology  
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## II. METHODS

Research design to be used was experimental by pretest and posted randomized control design. This design was used to measure treatment effect in the experimental group by comparing that group with control group. This research sample was thirty white mice (*Rattus Norvegicus*). The sample divided to be six groups, one negative control group, one positive control group and four treatment groups. Sample size in this research was five mice for each group. Giving mixture of yogurt and strawberry juice was done per oral by gavage for about thirty days. Selectra E Autoanalyzer was the tool used to examine cholesterol total, Cholesterol LDL, and Cholesterol HDL in the blood. Sonde needle was used to inject yogurt and strawberry juice through experimental mice with the dosage 2 ml and 3 ml per day.

The materials used were standard feed at the rate of 20 gr/tail/day, hypercholesterolemia feed as addition feed to increase mice's cholesterol level exogenously in order to reach hypercholesterolemia condition. Feeds with the cholesterol composition 1,5% goat fat, cooking oil 6 % and standard feed till 100 %. All the materials were stirred up until well mixed and transformed to be pellet form like standard feed [4]. Hypercholesterolemia condition to the mice could be reached by giving addition food in high cholesterol level for thirty days.

Cholesterol total, HDL and LDL analysed using WI-M- KK 2 BLK-SB method (Clinical Chemistry Autanalyzer) and the tool used was calibrated Selectra E Autoanalyzer at UPTD, West Sumatera Province Health laboratory. To measure the effect of giving yogurt mixture and strawberry juice to the blood lipid profile was done One Way Anova examine using statistic 8 software and to make differentiate for each treatment was done Least Significant Difference (LSD) on trusted degree 95% ( $p < 0,05$ ).

## III. RESULT AND DISCUSSION

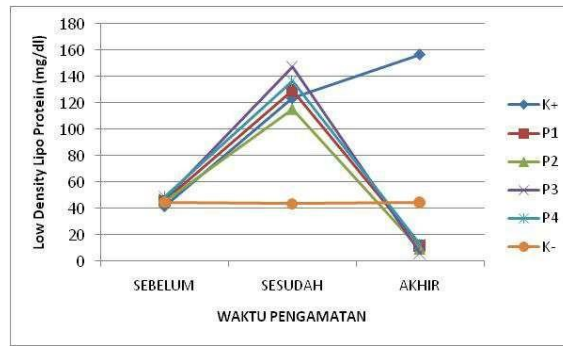
Hypercholesterolemia condition reached by giving hypercholesterolemic feed for thirty days. Cholesterol level increasing may caused by three things. First, diet contained much cholesterol and fat so that body has no ability to control it. Second, Cholesterol excretion to the colon trough by little gall acid. Third, in case when the cholesterol production in the liver in great quantities [5]. Mice's cholesterol level increasing by the time yogurt and strawberry juice giving caused by hypercholesterolemic feed. It's encourage over cholesterol forming that influential to cholesterol increasing in the blood. Goat fat that was got by frizzling was oxidated fat product. Oxidation fat product got into the body and to be in the blood lipoprotein as oxidated cholesterol. Low Density Lipoprotein (LDL) brought oxidated cholesterol in form of modified-LDL [5]. Increasing cholesterol in the research probably caused by oxidated cholesterol increasing that contained in the LDL. High cholesterol total could be reduced by yogurt and strawberry juice giving for thirty days. Mixed yogurt and strawberry juice giving drastically improved blood lipid profile of white mice. Average cholesterol level increasing after hypercholesterolemic feed giving and reduction cholesterol total level after yogurt giving, strawberry juice also yogurt mixed and strawberry juice is seen on Picture 1.

In the other side mixed yogurt and strawberry juice giving, cholesterol LDL level (mg/dl) on the average before and after yogurt giving to the white mice treatment, strawberry juice also yogurt and strawberry juice for each treatment group had real reduction compared with positive control. Cholesterol LDL reduction is showed on the picture 2. Yogurt giving, strawberry juice also mixed yogurt and strawberry juice gave the same effect to cholesterol LDL reduction where for each group treatment was not real different. This proved that by just yogurt giving, just strawberry juice or both of them could reduce drastically cholesterol LDL of white mice.

Cholesterol LDL level after yogurt and strawberry juice giving to the white mice is showed on the picture 3. White mice's cholesterol LDL level on the end treatment a little bit increased where the increasing for each group showed not real different. If to be compared with negative control group showed real different, and so positive control group. The other mechanism may happened is there's cholesterol assimilation activity by Lactobacillus casei strain Shirota bacterium. According to reference [5], research result after fermentation milk giving contained Lactobacillus casei shirota gives effect to real reducing on cholesterol total and cholesterol LDL.

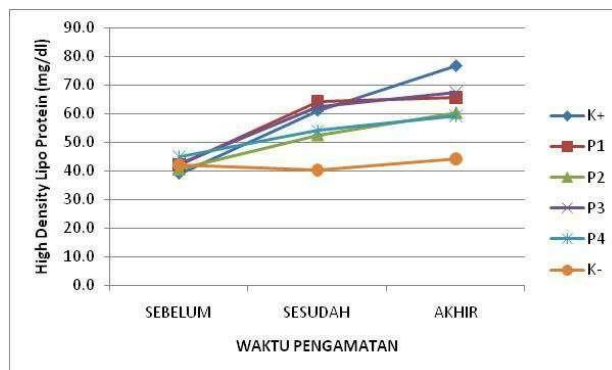


Picture 1. The Graphic of Cholesterol Total Level Average (mg/dl) of whitemic  
Cholesterol total level before hypercholesterolemic feed giving Cholesterol total level after  
hypercholesterolemic feed giving and before yogurt and strawberry juice treatment.  
Cholesterol total level of white mice after yogurt and strawberry juicetreatment.



Picture 2. The Graphic of Cholesterol LDL Level Average (mg/dl) of whitemic  
Cholesterol LDL level before hypercholesterolemic feed giving  
Cholesterol LDL level after hypercholesterolemic feed giving and beforeyogurt and  
strawberry juice treatment.  
Cholesterol LDL level of white mice after yogurt and strawberry juicetreatment.

This blood cholesterol level reducing caused by BAL ability that's L.casei in cholesterol. Assimilation. L. Casei will take or absorb the cholesterol and next the cholesterol will collect together to be one on bacteria cellular membrane, so that the bacteria is more endure to the lysis. The consequence of diet cholesterol absorption from digestion system, cholesterol level in the blood will also to reduce. Cholesterol HDL level of white mice after yogurt and strawberry juicetreatment.



Picture 3. The Graphic of Cholesterol HDL Level Average (mg/dl) of whitemic  
Cholesterol HDL level before hypercholesterolemic feed giving  
Cholesterol HDL level after hypercholesterolemic feed giving and beforeyogurt and strawberry  
juice treatment.

In the strawberry juice contained anthocyanin that has function as the antioxidant in the body so that it can prevent atherosclerosis occurred, the blood vessels clogging disease. Anthocyanin works to prevent atherogenesis process by oxidizing LDL. Anthocyanin also protects endothelial cell integrity that covering the vessels walls so no damage occurred. Endothelial cell damage is the beginning of atherosclerosis forming so it needs to be avoided. In the other hand, in the strawberry juice contains high vitamin C to increase HDL level that will sweep cholesterol LDL out, to increase cholesterol speed in gall acid, prevent LDL oxidation so it helps preventing plaque formed on the vessels that may cause heart vessels to be clogged. Next it has function as purgative so that increasing feces banishment where this case also to reduce reabsorption gall acid and its conversion to be cholesterol (Kurowska, 2002).

So based on this research to get maximal healthy advantages from foods, no wrong if applying synergy foods concept in daily menu. Optimal healthy advantages will be not reached if only stocked-still to curtailed nutrition supplement consumption. Various healthy food combination is a good solution to get healthy life. By running food synergy concept will be got many advantages like optimal nutrition food absorption, hungry controlling and body weight also to reduce cholesterol level and to maintain cholesterol level in normal condition. Beside clinical aspect to reduce cholesterol level, many things that we can see from this research just like functional foods combination that will produce positive synergy or foods synergy in the development of foods and nutrition's. So far, we just always be stunned to one kind of food component advantage. Like suggestion to consume vitamin C to keep body stay healthy or much zinc consumption to prevent anaemia or to eat one kind of antioxidant to avoid free radical. But, by food pattern changing around with new paradigm to move to functional foods, perception mistakes that to consume supplement like certain nutrition hopefully can be protected from diseases attack can be muffled. From the research result can be proved that a certain nutrition work ability needs interaction with others nutrition in order that give maximal advantages, except that certain kinds of food combination like yogurt and strawberry juice can to increase the advantages of that food by consume it togetherly.

#### IV. CONCLUSIONS

The Mixture of yogurt and strawberry juice can repair blood lipid profile, where it is proved to reduce drastically cholesterol total level, LDL in thirty days. Continuation research is needed about antioxidant activities in strawberry and to examine any compounds that dominantly most in reducing cholesterol level.

#### REFERENCES

- [1] R. D. Hatma., Nutrient Intake Relation to Lipid Profiles in Diverse Ethnic Population and Their, Dissertation Post Graduate Program University of Indonesia, 2001
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- [3] R. A. Fadri., " The effect of strawberry extract to lowering cholesterol" Tesis. Dissertation Post Graduate Program University of Andalas, 2010
- [4] Kelompok Kerja Ilmiah (KKI) Phyto Medica., " Guidelines Testing and Development Fitofarmak, Foundation for the Development of Natural Products Drug. Jakarta. 1993
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**REVIEW FORM**

13<sup>th</sup> September 2014

Ref. No. 11/ReV/IJASEIT/III/2014

Dear **Rince Alfia Fadri**  
Food Technology Politeknik Pertanian Negeri Payakumbuh, Indonesia  
Corresponding Author : alfiarince@gmail.com

Title:	The Mixture Of Yogurt And Strawberry Juice To Repair Blood Lipid Profile
Author(s):	Rince Alfia Fadri, Rilma Novita ,Fadil Oenzil, and Kesuma Sayuti
Paper-ID	386

**A. Technical aspects**

- |  | 0                        | 1                        | 2                        | 3                        | 4                                   | 5                                   |
|--|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| 1. The paper is within the scope of the Journal. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 2. The paper is original.                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 3. The paper is free of technical errors.        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |

**B. Communications aspects**

- |  | 0                        | 1                        | 2                        | 3                        | 4                                   | 5                                   |
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| 1. The paper is clearly readable.                                  | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 2. The figures are clear & do clearly convey the intended message. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 3. The length of the paper is appropriate.                         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |



### C. Comments to the authors (You may use another sheet of paper.)

Thank you very much for the submission through the online system. The manuscript has been reviewed. Please look into this and resubmission your manuscript after revision. Please find the revision in the attachment!

**The novelty:** The Mixture of yogurt and strawberry juice can repair blood lipid profile, where it is proved to reduce drastically cholesterol total level, LDL in thirty days. Research result after fermentation milk giving contained *Lactobacillus casei shirota* gives effect to real reducing on cholesterol total and cholesterol LDL. This drink is a choice of functional drinks

**The Title:** The **title** summarizes the main idea or ideas of your study. A good **title contains** the fewest possible words that adequately describe the contents and/or purpose of your research paper. The **title** is without doubt the part of a paper that is read the most, and it is usually read first. The title of this paper is good and informative.

**The abstract:** has already explained, "What is the importance of research". [An abstract should be between 150-250 words.]. Please improve the English, use simple sentence and provide the implication of research.

#### *Abstract*— **ABSTRACT**

Abstract – There are so many ways to do in reducing cholesterol concentration in blood. Yogurt and strawberry juice have ability to repair blood lipid profile at hypercholesterolemia. Research and lactobacillus development potentiation as the cholesterol killing probiotic that to be mixed with strawberry juice is necessary to do to support community health. The purpose of this reasearch was measuring the mixture of yogurt and strawberry juice effectiveness to repair blood lipid profile. The design of this research that to be used was experimental by pretest and posted randomized control design program. The sample of this research was thirty white mice (*Rattus Norvegicus*). Cholesterol Total, HDL and LDL to be analyzed by WI-M-KK2 BLK-SB metode (Clinical Chemistry Auto Analyzer) using tool Selectra E Auto Analyzer. The data was analyzed by Anova test, continued by LSD test using computer program. The result after giving mixture of yogurt and strawberry juice with the dosage 2ml and 3ml per day could obviously reduce LDL Level ( $p < 0,05$ ), Cholesterol Total ( $p < 0,05$ ) and to increase HDL Level ( $p > 0,05$ ). The differentiation in dosis giving showed unmeaning reduction result ( $p > 0,05$ ). Conclusion, the mixture of yogurt and strawberry juice could repair blood lipid profile, where it's proved to reduce drastically choleterol Total Level, LDL in 30 days.

Keywords— Yogurt; Strawberry Juice; Lipid Profile; Hypercholesterolemia

The **Introduction** typically occupies 10-15% of the paper. The **introduction should** consists of two parts: It **should** include a few general statements about the subject to provide a background to your paper and to attract the reader's attention. It **should** try to explain why you are writing the paper. The introduction section has included a general introduction, problem definition, problem solution, study motivation, aims and objectives, gaps in the literature.

**The introduction is already mentioned in the Introduction.**

The **Materials and methodology** is good. The methods have described how the research question was answered, explain how the results were analysed.

**Materials and methods has been written in more detailed**

**Results and Discussion** have included findings, comparison with prior studies, causal arguments, and deductive arguments.

**Result and discussion has been written in accordance with scientific principles**

**Conclusion:**

**The Conclusion has been written in relation to the objectives included in the introduction.**

**Reference:**

The author has added references to the publication, which has been published for the past three years, according to the reviewer's advice.

**Decision:** As a result of research with an appropriate methodology, **this paper is ACCEPTED for publication**

Additional Comments:

**There are some grammatical mistakes and some mistakes in Punctuation.**

**D. Recommendation (Tick one)**

1. Accepted without modifications.
2. Accepted with minor corrections.
3. Accepted with major modification.
4. Rejected.



**E. Comments to the editors** (These comments will not be sent to the authors)

Please makes sure that all reviewers comment already answered by the author and fixed it in the manuscript.

Sincerely,

Regards,

A handwritten signature in black ink, appearing to read "Rahmat Hidayat".

**Rahmat Hidayat**

Editor in Chief  
International Journal on Advanced Science,  
Engineering and Information Technology  
<http://ijaseit.insightsociety.org>

# The Mixture Of Yogurt And Strawberry Juice To Repair Blood Lipid Profile

Rince Alfia Fadri<sup>#</sup>, Rilma Novita<sup>#</sup>, Fadil Oenzil<sup>\*</sup>, and Kesuma Sayuti<sup>#</sup>

<sup>#</sup> Program Study of Food Technology, Polytechnic of Agricultural, University of Andalas, 26271  
Payakumbuh, West Sumatera, Indonesia E-mail rince.alfia@yahoo.co.id

<sup>\*</sup> Faculty of Medicine, University of Andalas

<sup>#</sup> Faculty of Agricultural Technology, University of Andalas, Padang 25163, West Sumatera, Indonesia

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**Abstract**— There are so many ways to do in reducing cholesterol concentration in blood. Yogurt and strawberry juice have ability to repair blood lipid profile at hypercholesterolemia. Research and lactobacillus development potent as the cholesterol killing probiotic that to be mixed with strawberry juice is necessary to do to support community health. The purpose of this research was measuring the mixture of yogurt and strawberry juice effectiveness to repair blood lipid profile. The design of this research that to be used was experimental by pretest and posted randomized control design program. The sample of this research was thirty white mice (*Rattus Norvegicus*). Cholesterol Total, HDL and LDL to be analyzed by WI-M-KK2 BLK-SB method (Clinical Chemistry Auto Analyzer) using tool Selectra E Auto Analyzer. The data was analyzed by Anova test, continued by LSD test using computer program. The result after giving mixture of yogurt and strawberry juice with the dosage 2ml and 3ml per day could obviously reduce LDL Level ( $p < 0,05$ ), Cholesterol Total ( $p < 0,05$ ) and to increase HDL Level ( $p > 0,05$ ). The differentiation in dosis giving showed unmeaning reduction result ( $p > 0,05$ ). Conclusion, the mixture of yogurt and strawberry juice could repair blood lipid profile, where it's proved to reduce drastically cholesterol Total Level, LDL in 30 days.

**Keywords**— Yogurt; Strawberry Juice; Lipid Profile; Hypercholesterolemia.

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## I. INTRODUCTION

Some media mentioned that Minang Ethnic occupy the highest position in hypertension and cholesterol because of its eat pattern. According to Health Limapuluh Kota district office (Dinas Kesehatan Kabupaten Limapuluh Kota) (2005) hypercholesterolemia number was 14.4% for women and 12,4% for men. This incident rose to 16,2% for women and 14% for men. The prevalence of community hypercholesterolemia reached 200-248 mg/dl. Young generation sufferer in the age of 25-34 years reached 9,3%. Women was being the most suffered in this case which's 14,5 % or almost twice as men group. A person has high risk affected by coronary heart disease (PJK) if cholesterol total concentration more than 240mg/dl, the LDL (Low Density Lipoprotein) plasma cholesterol more than 160 mg/dl and HDL cholesterol (High Density Lipoprotein) less than 35 mg/dl [1]. Many ways that can be used to reduce cholesterol concentration in the blood. Some studies indicated the Lactobacillus that is transferred from the media of laboratory (in vitro) into the body (in vivo properties) has the potential to reduce cholesterol in the blood [2]. The Mixture of yogurt and strawberry juice have ability to repair blood lipid profile [3]. Yogurt is one of probiotics dairy products drinks which are processed through the process of fermentation by adding good cultures organism, one of them is lactic acid bacteria. Strawberry (*Fragaria chiloensis*) is a fruit herb plant that has two hundred tiny seeds per one fruit. Several phytochemical compounds that was found in strawberry fruit are antosianin, acid elagiat, katekin, kuaerferin and kaemferol. One of the antosianin function is as antioxidants in the body to avoid atherosclerosis. Antosianin works to hamper atherogenesis process by oxidize the LDL. Research and development of Lactobacillus potential as probiotic cholesterol reductant mixed with strawberry juice need to be done to support community health. The purpose of this research was measuring the mixture of yogurt and strawberry juice effectiveness to repair blood lipid profile.

## II. METHODS

Research design to be used was experimental by pretest and posted randomized control design. This design was used to measure treatment effect in the experimental group by comparing that group with control group. This research sample was thirty white mice (*Rattus Norvegicus*). The sample divided to be six groups, one negative control group, one positive control group and four treatment groups. Sample size in this research was five mice for each group. Giving mixture of yogurt and strawberry juice was done per oral by gavage for about thirty days. Selectra E Autoanalyzer was the tool used to examine cholesterol total, Cholesterol LDL, and Cholesterol HDL in the blood. Sonde needle was used to inject yogurt and strawberry juice through experimental mice with the dosage 2 ml and 3 ml per day.

The materials used were standard feed at the rate of 20 gr/tail/day, hypercholesterolemia feed as addition feed to increase mice's cholesterol level exogenously in order to reach hypercholesterolemia condition. Feeds with the cholesterol composition 1,5% goat fat, cooking oil 6 % and standard feed till 100 %. All the materials were stirred up until well mixed and transformed to be pellet form like standard feed [4]. Hypercholesterolemia condition to the mice could be reached by giving addition food in high cholesterol level for thirty days.

Cholesterol total, HDL and LDL analysed using WI-M- KK 2 BLK-SB method (Clinical Chemistry Autanalyzer) and the tool used was calibrated Selectra E Autoanalyzer at UPTD, West Sumatera Province Health laboratory. To measure the effect of giving yogurt mixture and strawberry juice to the blood lipid profile was done One Way Anova examine using statistic 8 software and to make differentiate for each treatment was done Least Significant Difference (LSD) on trusted degree 95% ( $p < 0,05$ ).

## III. RESULT AND DISCUSSION

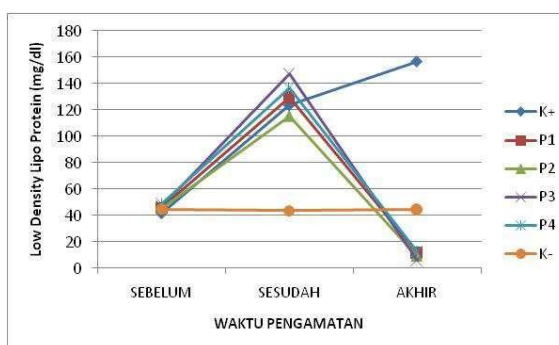
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High cholesterol total could be reduced by yogurt and strawberry juice giving for thirty days. Mixed yogurt and strawberry juice giving drastically improved blood lipid profile of white mice. Average cholesterol level increasing after hypercholesterolemic feed giving and reduction cholesterol total level after yogurt giving, strawberry juice also yogurt mixed and strawberry juice is seen on Picture 1. In the other side mixed yogurt and strawberry juice giving, cholesterol LDL level (mg/dl) on the average before and after yogurt giving to the white mice treatment, strawberry juice also yogurt and strawberry juice for each treatment group had real reduction compared with positive control. Cholesterol LDL reduction is showed on the picture 2.

Yogurt giving, strawberry juice also mixed yogurt and strawberry juice gave the same effect to cholesterol LDL reduction where for each group treatment was not real different. This proved that by just yogurt giving, just strawberry juice or both of them could reduce drastically cholesterol LDL of white mice.



Picture 1. The Grafik of Cholesterol Total Level Average (mg/dl) of whitemic  
 Cholesterol total level before hypercholesterolemic feed giving  
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 Cholesterol total level of white mice after yogurt and strawberry juicetreatment.



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In the strawberry juice contained anthocyanin that has function as the antioxidant in the body so that it can prevent atherosclerosis occurred, the blood vessels clogging disease. Anthocyanin works to prevent atherogenesis process by oxidizing LDL. Anthocyanin also protects endothelial cell integrity that covering the vessels walls so no damage occurred. Endothelial cell damage is the beginning of atherosclerosis forming so it needs to be avoided. In the other hand, in the strawberry juice contains high vitamin C to increase HDL level that will sweep cholesterol LDL out, to increase cholesterol speed in gall acid, prevent LDL oxidation so it helps preventing plaque formed on the vessels that may cause heart vessels to be clogged. Next it has function as purgative so that increasing feces banishment where this case also to reduce reabsorption gall acid and its conversion to be cholesterol (Kurowska, 2002).

So based on this research to get maximal healthy advantages from foods, no wrong if applying synergy foods concept in daily menu. Optimal healthy advantages will be not reached if only stocked-still to curtailed nutrition supplement consumption. Various healthy food combination is a good solution to get healthy life. By running food synergy concept will be got many advantages like optimal nutrition food absorption, hungry controlling and body weight also to reduce cholesterol level and to maintain cholesterol level in normal condition. From the research result can be proved that a certain nutrition work ability needs interaction with others nutrition in order that give maximal advantages, except that certain kinds of food combination like yogurt and strawberry juice can to increase the advantages of that food by consume it together. Beside clinical aspect to reduce cholesterol level, many things that we can see from this research just like functional foods combination that will produce positive synergy or foods synergy in the development of foods and nutrition's.

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**REVIEW FORM**

16<sup>th</sup> September 2014  
Ref. No. 14/ReV/IJASEIT/III/2014

Dear **Rince Alfia Fadri**  
Food Technology Politeknik Pertanian Negeri Payakumbuh, Indonesia  
Corresponding Author : alfiarince@gmail.com

Title:	The Mixture Of Yogurt And Strawberry Juice To Repair Blood Lipid Profile
Author(s):	Rince Alfia Fadri, Rilma Novita ,Fadil Oenzil, and Kesuma Sayuti
Paper-ID	386

**A. Technical aspects**

- |  | 0                        | 1                        | 2                        | 3                        | 4                                   | 5                                   |
|--|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------------------|-------------------------------------|
| 1. The paper is within the scope of the Journal. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |
| 2. The paper is original.                        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 3. The paper is free of technical errors.        | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |

**B. Communications aspects**

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| 2. The figures are clear & do clearly convey the intended message. | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/>            | <input checked="" type="checkbox"/> |
| 3. The length of the paper is appropriate.                         | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input checked="" type="checkbox"/> | <input type="checkbox"/>            |

### C. Comments to the authors (You may use another sheet of paper.)

Thank you very much for the submission through the online system. The manuscript has been reviewed. Please look into this and resubmission your manuscript after revision. Please find the revision in the attachment!

**The novelty:** The Mixture of yogurt and strawberry juice can repair blood lipid profile, where it is proved to reduce drastically cholesterol total level, LDL in thirty days. Research result after fermentation milk giving contained *Lactobacillus casei shirota* gives effect to real reducing on cholesterol total and cholesterol LDL. This drink is a choice of functional drinks

**The Title:** The **title** summarizes the main idea or ideas of your study. A good **title contains** the fewest possible words that adequately describe the contents and/or purpose of your research paper. The **title** is without doubt the part of a paper that is read the most, and it is usually read first. The title of this paper is good and informative.

**The abstract:** has already explained, "What is the importance of research". [An abstract should be between 150-250 words.]. Please improve the English, use simple sentence and provide the implication of research.

#### *Abstract*— **ABSTRACT**

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**The Introduction** The introduction should consists of two parts: It should include a few general statements about the subject to provide a background to your paper and to attract the reader's attention. It should try to explain why you are writing the paper. The introduction section has included a general introduction, problem definition, problem solution, study motivation, aims and objectives, gaps in the literature.

The introduction is already mentioned in the Introduction.

The Materials and methodology is good. The methods have described how the research question was answered, explain how the results were analysed.

Materials and methods has been written in more detailed

Results and Discussion have included findings, comparison with prior studies, causal arguments, and deductive arguments.

Result and discussion has been written in accordance with scientific principles

Conclusion:

The Conclusion has been written in relation to the objectives included in the introduction.

Reference:

The author has added references to the publication, which has been published for the past three years, according to the reviewer's advice.

Decision: As a result of research with an appropriate methodology, **this paper is ACCEPTED for publication**

Additional Comments:

There are some grammatic mistakes and some mistakes in Punctuation. Please revise the Table numbers

**D. Recommendation (Tick one)**

1. Accepted without modifications.
2. Accepted with minor corrections.
3. Accepted with major modification.
4. Rejected.



**E. Comments to the editors** (These comments will not be sent to the authors)

Please makes sure that all reviewers comment already answered by the author and fixed it in the manuscript.

Sincerely,

Regards,

A handwritten signature in black ink, appearing to read "Rahmat Hidayat".

**Rahmat Hidayat**

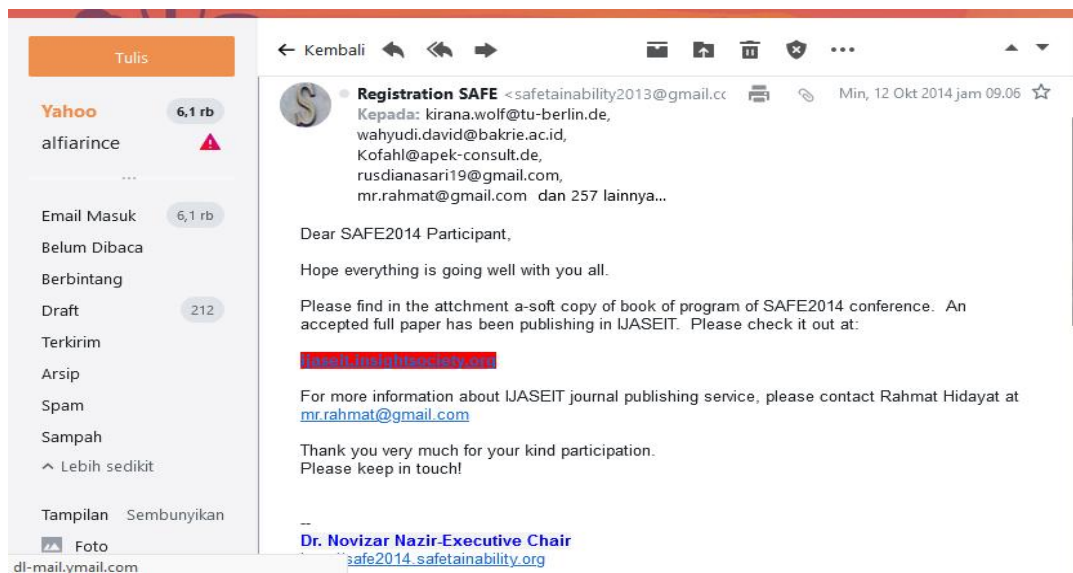
Editor in Chief  
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## 8. The Paper Code Tanggal 18 September 2014 Jam 05.19 WIB



Gambar 3. The Paper Code

## 9. LoA dan permintaan full paper pada editor IJASEIT Minggu 12 Oktober 2014 Jam 09.06 WIB



Gambar 2. LoA dan permintaan Full Paper pada editor IJASEIT Minggu 12 Oktober 2014 Jam 09.06 WIB

## 8. Full Paper

### The Mixture Of Yogurt And Strawberry Juice To Repair Blood Lipid Profile

Rince Alfia Fadri<sup>1</sup>, Rilma Novita<sup>1</sup>, Fadil Oenzil<sup>2</sup>, dan Kesuma Sayuti<sup>3</sup>

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**Abstract** — There are so many ways to do in reducing cholesterol concentration in blood. Yogurt and strawberry juice have ability to repair blood lipid profile at *hypercholesterolemia*. Research and *lactobacillus* development potentiation as the cholesterol killing probiotic that to be mixed with strawberry juice is necessary to do to support community health. The purpose of this reasearch was measuring the mixture of yogurt and strawberry juice effectiveness to repair blood lipid profile. The design of this research that to be used was experimental by pretest and posted randomized control design progam. The sample of this research was *thirty* white mice (*Rattus Norvegicus*). Cholesterol Total, HDL and LDL to be analyzed by WI-M-KK2 BLK-SB methode (Clinical Chemstry Auto Analyzer) using tool Selectra E Auto Analyzer. The data was analyzed by Anova test, continued by LSD test using computer program . The result after giving mixture of yogurt and strawberry juice with the dosage 2ml and 3ml per day could obviously reduce LDL Level ( $p < 0,05$ ), Cholesterol Total ( $p < 0,05$ ) and to increase HDL Level ( $p > 0,05$ ). The differentiation in dosis giving showed unmeaning reduction result ( $p > 0,05$ ). Conclusion, the mixture of yogurt and strawberry juice could repair blood lipid profile, where it's proved to reduce drastically choleterol Total Level, LDL in 30 days.

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#### I. INTRODUCTION

Some media mentioned that Minang *Ethnic* occupy the highest position in hypertension and cholesterol because of its eat pattern. According to Health Limapuluh Kota district office (*Dinas Kesehatan Kabupaten Limapuluh Kota*) (2005) *hypercholesterolemia* number was 14.4% for women and 12,4% for men. This incident rose to 16,2% for women and 14% for men. The prevalence of commnunity *hypercholesterolemia* reached 200-248 mg/dl. Young generation sufferer in the age of 25-34 years reached 9,3%. Women was being the most suffered in this case which's 14,5 % or almost twice as men group. A person has high risk affected by coranary heart disease (*PJK*) if cholesterol total concentration more than 240mg/dl, the LDL (Low Density Lipoprotein) plasma cholesterol more than 160 mg/dl and HDL cholesterol (High Density Lipoprotein) less than 35 mg/dl [1].

Many ways that can be used to reduce cholesterol concentration in the blood. Some studies indicated the *Lactobacillus* that is transferred from the media of laboratory (in vitro) into the body (in vivo properties) has the

potential to reduce cholesterol in the blood [2]. The Mixture of yogurt and strawberry juice have ability to repair blood lipid profile [3]. Yogurt is one of probiotics dairy products drinks which are processed through the process of fermentation by adding good cultures organism, one of them is lactic acid bacteria. Strawberry (*Fragaria chiloensis*) is a fruit herb plant that has two hundred tiny seeds per one fruit. Several phytochemical compounds that was found in strawberry fruit are *antosianin*, *acid elagiat*, *katekin*, *kuaerferin* and *kaemferol*. One of the *antosianin* function is as antioxidants in the body to avoid *atherosclerosis*. *Antosianin* works to hamper *aterogenesis* process by *oxidize* the LDL.

Research and development of *Lactobacillus* potential as probiotic cholesterol reductant mixed with strawberry juice need to be done to support community health. The purpose of this reasearch was measuring the mixture of yogurt and strawberry juice effectiveness to repair blood lipid profile.

#### II. METHOD

Research design to be used was experimental by *pretest and posted randomized control design*. This design was used to measure treatment effect in the

experimental group by comparing that group with control group. This research sample was thirty white mice (*Rattus Norvegicus*). The sample divided to be six groups, one negative control group, one positive control group and four treatment groups. Sample size in this research was five mice for each group. Giving mixture of yogurt and strawberry juice was done per oral by *gavage* for about thirty days. *Selectra E Autoanalyzer* was the tool used to examine cholesterol total, Cholesterol LDL, and Cholesterol HDL in the blood. *Sonde needle* was used to inject yogurt and strawberry juice through experimental mice with the dosage 2 ml and 3 ml per day.

The materials used were standard feed at the rate of 20 gr/tail/day, *hypercholesterolemic* feed as additio feed to increase mice's cholesterol level exogeneously in order to reach *hypercholesterolemia* condition. Feeds with the cholesterol composition 1,5% goat fat, cooking oil 6 % and standard feed till 100 %. All the materials were stired up untill well mixed and transformed to be *pelet* form like standard feed [4]. *Hypercholesterolemia* condition to the mice could be reached by giving addition food in high cholesterol level for thirty days.

Cholesterol total, HDL and LDL analyzed using WI-M-KK 2 BLK-SB methode (*Clinical Chemistry Autanalyzer*) and the tool used was calibrated *Selectra E Autoanalyzer* at UPTD, West Sumatera Province Health laboratory. To measure the effect of giving yogurt mixture and strawberry juice to the blood lipid profile was done One Way Anova examine using statistix 8 software and to make diferenciate for each treatment was done Least Significant Defference (LSD) on trusted degree 95% ( $p < 0,05$ ).

### III. RESULT AND DISCUSSION

*Hypercholesterolemia* condition reached by giving *hypercholesterolemic* feed for thirty days. Cholesterol level increasing may caused by three things. First, diet contained much cholesterol and fat so that body has no ability to control it. Second, Cholesterol excretion to the colon trough by little gall acid. Third, in case when the cholesterol production in the liver in great quantities [5].

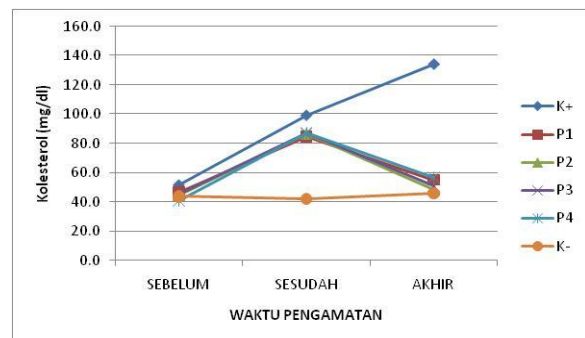
Mice's cholesterol level increasing by the time yogurt and strawberry juice giving caused by *hypercholesterolemic* feed. It's encourage over cholesterol forming that influantial to cholesterol increasing in the blood. Goat fat that was got by frizzling was oxidated fat product. Oxidation fat product got into the body and to be in the blood lipoprotein as oxidated cholesterol. Low Density Lipoprotein (LDL) brought oxidated cholesterol in form of *modified-LDL* [5]. Increasing cholesterol in the research probably

caused by oxidated cholesterol increasing that contained in the LDL.

High cholesterol total could be reduced by yogurt and strawberry juice giving for thirty days. Mixed yogurt and strawberry juice giving drastically improved blood lipid profile of white mice. Average cholesterol level increasing after hypercholesterolemic feed giving and reduction cholesterol total level after yogurt giving, strawberry juice also yogurt mixed and strwaberry juice is seen on Picture 1.

In the other side mixed yogurt and strawberry juice giving, cholesterol LDL level (mg/dl) on the average before and after yogurt giving to thewhite mice treatment, strawberry juice also yogurt and strawberry juice for each treatment group had real reduction compared with positive control. Cholesterol LDL reduction is showed on the picture 2.

Yogurt giving, strawberry juice also mixed yogurt and strawberry juice gave the same effect to cholesterol LDL reduction where for each group treatment was not real different. This proved that by just yogurt giving , just strawberry juice or both of them could reduce drastically cholesterol LDL of white mice.

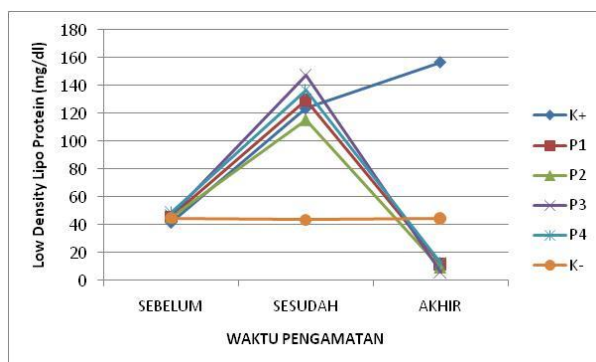


Picture 1. The Grafic of Cholesterol Total Level Average (mg/dl) of white mice

Sebelum / Before : Cholesterol total level before hypercholesterolemic feed giving

Sesudah / After : Cholesterol total level after hypercholesterolemic feed giving and before yogurt and strawberry juice treatment.

Akhir/End : Cholesterol total level of white mice after yogurt and strawberry juice treatment.





Picture 2. The Grafik of Cholesterol LDL Level Average (mg/dl) of white mice

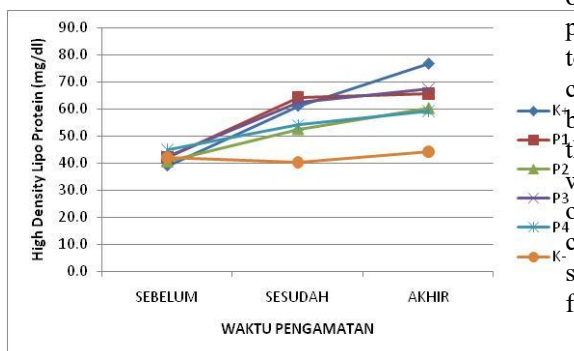
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Cholesterol LDL level after yogurt and strawberry juice giving to the white mice is showed on the picture 3. White mice's cholesterol LDL level on the end treatment a little bit increased where the increasing for reach group showed not real different. If to be compared with negative control group showed real different, and so positive control group.

The other mechanism may happened is there's cholesterol assimilation activity by *Lactobacillus casei* strain Shirota battery. According to reference [5], research result after fermentation milk giving contained *Lactobacillus casei shirota* gives effect to real reducing on cholesterol total and cholesterol LDL. This blood cholesterol level reducing caused by BAL ability that's *L.casei* in cholesterol. Assimilation. *L. Casei* will take or absorp the cholesterol and next the cholesterol will collect together to be one on bacteria cellular membran, so that the bacteria is more endure to the lysis. The consequence of diet cholesterol absorption from digestion system, cholesterol level in the blood will also to reduce.



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Akhir/End : Cholesterol HDL level of white mice after yogurt and strawberry juice treatment.

In the strawberry juice contained antosianin that has function as the antioxidant in the body so

that it can prevent ateroklerosis occurred, the blood vessels clogging disease. Antosianin works to prevent aterogenesis process by oxydizing LDL. Antosianin also protects endotel cell integrity that covering the vessels walls so no damage occurred. Endotel cell damage is the beginning of ateroklerosis forming so it needs to be avoided. In the other hand, in the strawberry juice contains high vitamin c to increase HDL level that will sweep cholesterol LDL out, to increase throwed cholesterol speed in gall acid, prevent LDL oxydation so it helps preventing plaque formed on the vessels that may cause heart vessels to be clogged. Next it has function as pulmer so that increasing feces banishment where this case also to reduce reabsorption gall acid and its conversion to be cholesterol (Kurowska, 2002)

So based on this research to get maximal healthy advantages from foods, no wrong if applying synergy foods concept in daily menu. Optimal healthy advantages will be not reached if only stocked-still to certained nutrition supplement consumption. Various healthy food combination is a good solution to get helthy life. By running food synergy concept will be got many advantages like optimal nutrition food absorption, hungry controlling and body weight also to reduce cholesterol level and to maintan cholesterol level in normal condition. Beside clinical aspect to reduce cholesterol level, many things that we can see from this research just like functional foods combination that will produce positive synergy or foods synergy in the development of foods and nutritions. So far, we just always be stunned to one kind of food component advantage. Like suggestion to consume vitamin c to keep body stay healthy or much zinc consumption to prevent anemia or to eat one kind of antioxidant to avoid free radical. But, by food pattern changing around with new paradigma to move to functional foods, perception mistakes that to consume supplement like certain nutritions hopely can be protected from deseases attack can be muffed. From the research result can be proved that a certain nutrition work ability needs interaction with others nutrition in order that give maximal advantages. sExcept that certain kinds of food combination like yogurt and strawberry juice can to increase the advantages of that food by consume it togetherly.

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## The Mixture Of Yogurt And Strawberry Juice To Repair Blood Lipid Profile

Rince Alfia Fadri<sup>#</sup>, Rilma Novita<sup>#</sup>, Fadil Oenzil<sup>\*</sup>, and Kesuma Sayuti<sup>#</sup>

<sup>#</sup> Program Study of Food Technology, Polytechnic of Agricultural, University of Andalas, 26271 Payakumbuh, West Sumatera, Indonesia

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