

EXAMINATION OF THE SUNGKAI'S YOUNG LEAF EXTRACT (*Peronema canescens*) AS AN ANTIPIRETIC, IMMUNITY, ANTIPLASMODIUM AND TERATOGENITY IN MICE (*Mus.muculus*)

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Abstract - The research of examination extract sungkai's young leafs as an antipyretic, immunity, anti plasmodium and teratogenity in mice (*Mus. Muculus*) has been done. The aims of this research is examinations in infusa effectiveness extract of the young leafs in mice (*Mus. Muculus*). The object of this research used 50 males Webster's species mice has 7 - 8 week olds, averages 30 gram in weight. Mice are divided into 5 groups in examination for antipyretic. Mice has been introduced the DPT-HB fever before. The first group as a negative control treated a pure water, second group as a positive control treated a paracetamol 1.08 mg/Kg w/w and rest of groups treated a young sungkai's extract leafs in the concentration of 0.186 mg/Kg w/w, 0.375 mg/Kg w/w and 0.5625 mg/Kg w/w respectively. Measurements of the temperature toke in the duration of 30, 60, 90 and 120 minutes. Furthermore, in the immunity examination, mice also divided into 5 groups, first as a negative control treated a pure water, second group as a positive control treated 0.07 mg/Kg imunus w/w and respectively for the rest groups treated with young sungkai's extract leafs in the concentration of 0.186 mg/Kg w/w, 0.375 mg/Kg w/w and 0.5625 mg/Kg w/w. These treatments held in gavage system with the duration at 24 hours. In examination amount of the leukocyte number, toke from the tail of the mice, has a result the dosage in 0.5625 mg/Kg w/w extract's young leafs of sungkai could be decrease the temperature 29%, it is better than paracetamol treatment which could be decreased only 26% of temperature. In addition, for the immunity examination, the best dosage of the young sungkai's extract leafs is 0.567 mg/Kg w/w, which It can increase 36% amount of the leukocyte number. This dosage is better than the positive control by using Imunos, which is can increase only 23% of the temperature.

Keyword : Sungkai, antipyretic, immunity, anti plasmodium, teratogenity

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INTRODUCTION

Existence of the herbal as a medicine has been known since thousands years, it was proved in Lontar's leafs written, in the walls of the monument and in the old scripture. Knowledge of the herbal as a medicine recipe has been given as a heritage in a large community in the world (Trubus, 2012). Many kinds of the painful which is related in health could be cured by using the herbal formulation. So, the knowledge of the herbal recipe as a medicine should be care and conserved as a Social heritage of the nations (Kartasaputra, 1996).

Sungkai (*Peronema canescens*) named as Jati barang, ki sabrang, kurus, sekai and sungkai, is included in the family of Verbenaceae. *P. canescens* which is found in Bengkulu Province and surround. Planted as border of the house and spread as plant's forest. According to Harmida

and Yuni (2011), at the Dayak Tribe, East Kalimantan, they used the herbal as a medicine and care of their health including sungkai's leafs until now. They used the young leafs of sungkai, from Verbenaceae species, for treatment of fever, influenza, stomachache, antiseptic in the mouth and skincare. In South Sumatera n Lampung Province, the young leafs of Sungkai (*P. canescens*. Jack) used for anti plasmodium and fever. Based on the research by Yani (2013), mentioned that the young leafs of Sungkai traditionally used for the antipyretic, anti plasmodium and body's immunity at the Lembak Delapan Tribe. Furthermore, based on another research, the young leafs of Sungkai (*P. canescens*. Jack) traditionally used for anti inflammatory by *Tapel* method at Serawai Tribe in Bengkulu Province (Yani et al,2009). Water temper of *P. canescens*. Jack's leafs used for anti plasmodium and

Water temper of *P. canescens*. Jack's rod used for smallpox at Curup's community, Bengkulu (Sunarti, 2012) (Katigawa et al, 1994).

According to Ningsih and Subehan (2013), extract's isolation of the *P. canescens*. Jack's leaves by the n-hexane solvent, produce isolate of Vitamin B1. which is include in terpenoids compound, at the max wave length 207 nm by Ultra Violet (UV) Spectrophotometer. In addition analysis by using Infra Red Spectrophotometer, mentioned hydroxide functional, aliphatic functional, carbonyl functional, ketones functional and ester functional. According to Grestina (2012), compound which has bioactivities an immunostimulatory agent i.e. polysaccharide, alkaloid and polyphenols. Sumiarsi and Deswina (1996) mentioned that the leaves of sungkai can used for anti plasmodium. In addition, research by Katigawa et al (1994) mentioned that in the leaves of Sungkai have Peronemin as an active compound and the others are Sitosterol, isopropanol, phytol, n-hexane n- β -amyryn. There are many kinds of peronemin, such as Peronemin A₂, A₃, B₁, B₃ C₁ and D₁.

It was very popular in Indonesia, the first rank symptom of many kinds infection is fever. Sometimes the temperature of the body up to 37°C when infection attack. It can be solved by using the antipyretic. In general, characteristic of the analgesic have an antipyretic's side effect. On the contrary, sometimes characteristic of the antipyretic has an antipyretic analgesic effect, for example by using acetaminophen (paracetamol) and asetosal (aspirin). Antipyretic can prevent formulating of prostaglandin by hamper cyclooxygenase enzyme. As a result the point hypothalamus is decreased in the normal condition so there is no more fever in the body (Pharmacology Dept of Medical Faculty of Indonesia University, 2008).

Immunity is the resistance of the illness especially in infection symptoms. Group of the cell, molecule and muscle tissue create a mechanism to protect from infection, called immunity system. The coordination of this mechanism to respond from microorganism and another substance's activities, called immunity respond. Immunity system used to protect from the health problem caused by external factors such as the environment pollution. Immunity system can be indicated by the amount of leucocytes in the blood.

The side effects by using herbal's medicine are smaller than using the patent medicine. However, it must be responsible scientifically and be save to the human's body. So, it is need to make a research for understanding precisely the dosages and effectiveness the utilization of sungkai's young leaves as a herbal's medicine to treat fever, plasmodium, teratogenity and immunity. The aims of this research are for understanding to the capabilities of extract sungkai's young leaves as an antipiretic, immunity, antiplasmodium and teratogenity in mice (*mus.muculus*). Furthermore, second objective is make a sungkai's young leaves as a herbal's medicine can be responsibility scientifically for human body.

Apparatus/ Equipments

Equipments used in this research are mice's cage, little bottle for mice's drinking, cutter, blender, glove,

drop pipette, beaker glass, test tube, Erlenmeyer, water bath, hemasitometer, funnel, separator funnel, gavage's equipment, hypodermic needle, tissue, chamber's counter, analytical balance, digital's camera, infra red thermometer, rotary evaporator, microscope camera, stationery.

MATERIALS AND METHODS

Materials which is used in this research are, young leaves of Sungkai, males mice, vaccine DPT-HB, paracetamol, imunos, etanol, aquadest, Turk reagent, feeding mice.

Procurement and Preparation to Make an Extract of Sungkai's Young Leafs.

The young leaves of Sungkai took from Bengkulu's city surround. Identification of the sungkai's young leaves is selected by the green violet color, in the top of the branch. After collecting the young leaves, it was washed in the aquadest, cut in to small part leaves then blow dry in the room temperature in a couple of weeks. The dried leaves are blended in to a powder, take 1880 gram, macerated in 6 L Alcohol 96%, shaken during 10 days in the storage. Product of the storage, is filtered, then the filtrate is concentrated by heating. Concentrated Product is ready to treat for mice by gavage's system (Harborne, 1996).

Treat to the mice

Male mice (*Mus musculus*) take in a dry cage to care of the mice's health. According to Malole and Pramono (1989), the cage is always keep in the dried situation to protect mice from the bad condition such as the bad odor, irritation of the mice's skin etc. All of mice are adapted in this situation during two weeks (14 days).

The first years of the research, used 50 male mice (furrow Swiss Webster) which has 30 gram in weigh and 7-8 weeks ages. Mice is divided in to 5 groups, mice has been introduced the DPT-HB fever before. The first group as a negative control treated a pure water, second group as a positive control treated a paracetamol 1.08 mg/Kg w/w and rest of groups treated a young *sungkai's* extract leaves in the concentration of 0.186 mg/Kg w/w, 0.375 mg/Kg w/w and 0.5625 mg/Kg w/w respectively. Measurements of the temperature toke in the duration of 30, 60, 90 and 120 minutes. Furthermore, in the immunity examination, mice also divided into 5 groups, first as a negative control treated a pure water, second group as a positive control treated 0.07 mg/Kg *imunos* w/w and respectively for the rest groups treated with young *sungkai's* extract leaves in the concentration of 0.186 mg/Kg w/w, 0.375 mg/Kg w/w and 0.5625 mg/Kg w/w. These treatments held in *gavage* system with the duration at 24 hours. Data collected is analyzed in the ANOVA and tested by Duncan's system.

RESULT AND DISCUSSION

Sungkai's Young Leafs Extract

1,88 Kg Sungkai's young leaves (*Peronema canescens*) used in this research is a dried leaves comes from 10 Kg fresh young leaves called simplicia. This simplicia was soaked in 6L alcohol 96% during 10 days, called maceration. Furthermore, 175 ml simplicia is

concentrated by heating in the rotary evaporator until change color to be green dark weighing 87 gram.
Antipyretic Test

In the antipyretic test used 25 mice which is divided into 5 groups treated with 5 times repetition, it can decreased the mice temperature as mentioned in the Table 1.

Table 1. Average Decrease of the mice temperature by using Sungkai's young leaves.

No	Groups	Repe-tition	Averages					
			Initial Temp. (°C)	Temperature after 3 hours of vaccination's injection (°C)	Mice's Temperature after 30 minutes (°C)	Mice's Temperature after 60 minutes (°C)	Mice's Temperature after 90 minutes (°C)	Mice's Temperature after 120 minutes (°C)
1	P0	5	36,8	36,8	37	36,9	36,7	36,3
2	P1	5	36,6	37,1	36,5	36,3	36,3	36,1
3	P2	5	36,5	36,9	36,6	36,6	36,7	36,5
4	P3	5	36,9	37,1	36,5	36,3	36,4	36,1
5	P4	5	36,8	37,4	36,7	36,6	36,6	36,3

Addition Information : P0 ; Distillated water injected (0.2 mL/ Kg w/w)
 P1 ; Paracetamol injected (1.08 mg/Kg w/w)
 P2 ; Sungkai's young leafs extract injected (0.186 mg/Kg w/w)
 P3 ; Sungkai's young leafs extract injected (0.375 mg/Kg w/w)
 P4 ; Sungkai's young leafs extract injected (0.5625 mg/Kg w/w)

Graph Decrease of The Temperature

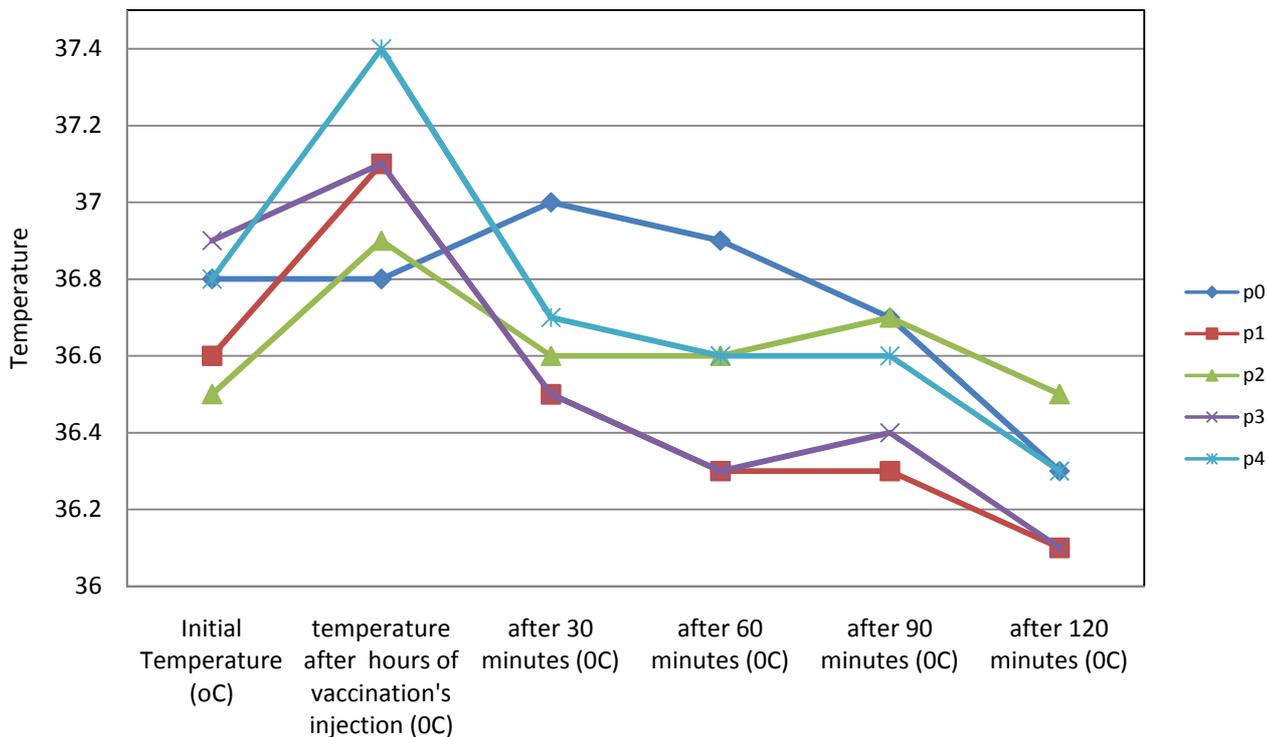


Figure 1. Graph Decreased of the Temperature of Mice

Based on the variant analysis in each group at all treatment, it have not significant value. However, mentioned in the decrease of the temperature at P0=0.5°C, P1=1 °C, P2=0.4 °C, P3=1 °C and P4=1.1 °C and based on the graph (Table1),there is a differentiation temperature's decrease at P4 is faster than at P1 in group

of positive control. It can be explained that using of young leafs of Sungkai, which is contains many active compounds such as, peronemin, sitosterol, isopropanol, phytol, diterpenoid are faster than using paracetamol pure, in positive control (P1). In antipyretic test, has a result the dosage in 0.5625 mg/Kg w/w extract's young

leaves of *sungkai* could be decrease the temperature 29%, it is better than paracetamol treatment which could be decreased only 26% of temperature.

Based on the graph 1, the best decrease of the temperature is P4 (dosage 3 = Sungkai's young leaves extract injected 0.5625 mg/Kg w/w), i.e. 1.1°C, from average temperature 37.4 °C to 36.3 °C. Furthermore, P3 (Sungkai's young leaves extract injected 0.375 mg/Kg w/w), it can decrease 1.0°C, is the same condition at P1 as a positive control. In addition, P0 as a negative control, decrease of the temperature is only 0.5°C. The least of the temperature decrease is P2, only 0.4°C. It has mentioned that using extract of Sungkai's young leaves (*Peronema*

canescens) influence to the decrease of temperature during mice's fever, even though not significantly different by statistical analysis. Using dosages(P4) 0.5625 mg/Kg w/w is better than using (P2), the positive control by Paracetamol as a comparative dosage. Tendency of decreasing the temperature is caused by the many active compounds contains at Sungkai's young leaves (*Peronema canescens*).

Immunities Tests

As many as 25 mice samples which are divided into 5 groups with 5 times repetitions, have an average amount of leukocytes, mentioned in the Table 2, below:

Table 2. The average amounts of leukocytes (in Thousands)

Repetition	P0 Control	P1 Imunos	P2 Dosage 1	P3 Dosage 2	P4 Dosage 3
1	4,02	3,98	3,52	4,92	6,34
2	4,12	3,84	4,18	4,1	6,28
3	4,38	13,54	4,66	4,96	7,14
4	8,6	5,7	4,28	4,92	9,48
5	6,06	6,2	6,8	5,86	7,38
Amount (ΣXi)	27,18	33,26	23,44	24,76	36,62
Average	5,4	6,652	4,699	4,952	7,324

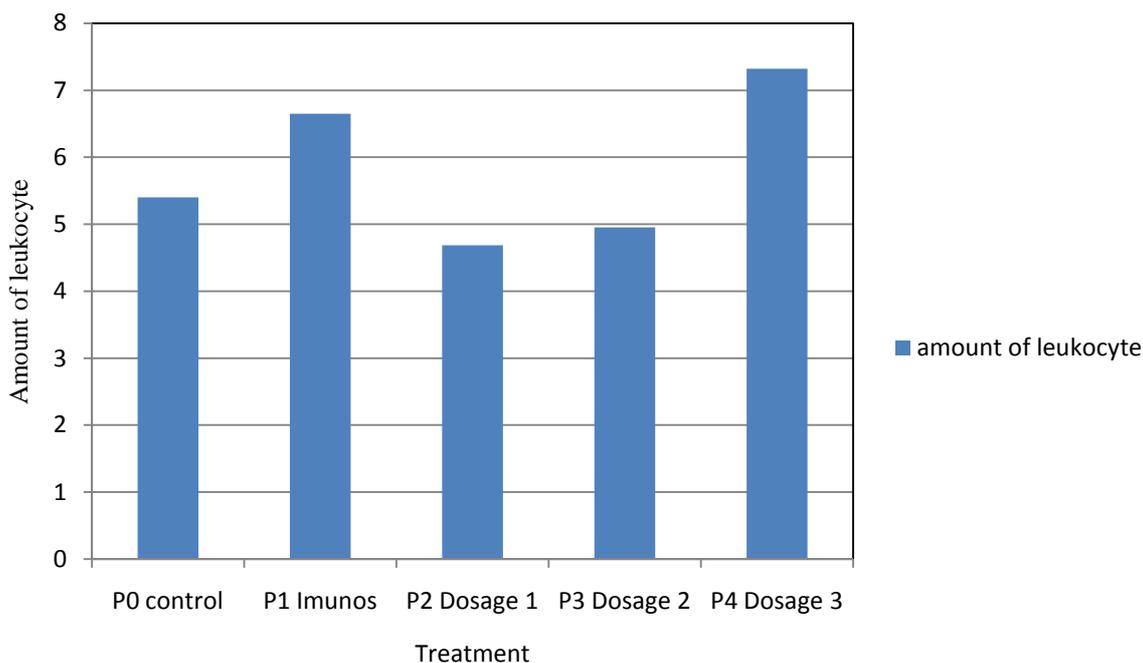


Figure 2. Amounts of the Leukocytes

Based on variant analysis, each group has no significantly different. However, in the data amounts of the leukocyte, the P0 has 5400/ml, P1(Imunos) has 6652/ml, P2 (Dosage 1) has 4699/ ml, P3 (Dosage2) has 4952 and P4 (dosage) has 7324/ ml. It is also mention in figure 2, from P0 to P1 there is an augmentation amount of leukocyte. Furthermore, in the different dosage from P1 (1.08 mg/Kg w/w) as a positive control to P4 (0.5625 mg/Kg w/w) there is an augmentation amounts of leukocyte until 7324/ml. It showed that treatment by using of Sungkai's young leaves (*Peronema canescens*) has

an influence in the system of body's immunity. The augmentation amount of leukocyte in the blood, can be increase the body's immunity which is can be protect human's body from many kinds of the diseases, such as the infection etc.

Treatment by extract of Sungkai's young leaves (*Peronema canescens*) as a herbal medicine, has more advantages than using imunos as a single medicine, because in the herbal medicine has much more active chemistry compounds such as *Peronemin*, *Sitosterol*, *Isopropnalo*, *Phytol*, *Dipterpenoid*, and *Falvonoid* which

are synergistically to increase amount of leukocytes in the body. It shown in the immunity treatment, the dosage of extract of Sungkai's young leafs in concentration of 0.567 mg/Kg w/w can increase 36% amount of the leukocyte. In the contrary, treatment by using Imunos can increase 23% amount of leukocyte only.

CONCLUSIONS

Based on the result of this research can be concluded, that by using the extract of Sungkai's young leafs (*Peronema canescens*) as a herbal medicine in the dosage of 0.5625 mg/Kg w/w can decrease 29% of the mice's temperature and it can augment 36% amount of leukocytes.

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