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The 2nd ISNP

Traditional medicines :

*"A Challenge in drug discovery from
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**EFFECTIVITY TEST OF BINAHONG LEAF EXTRACT
(*Anredera cordifolia* (Ten.) Steenis) OINTMENT
ON WOUND HEALING IN RATS (*Rattus norvegicus*)**

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Abstract

Binahong leaf (*Anredera cordifolia* (Ten.) Steenis) is one of the herbs that can be used for wound healing. Chemical contents include flavonoids, saponin triterpenoids (oleanolik acid), protein, vitamin C that have an important role in the wound healing process. The aim of this study is to determine the effect of Binahong leaf extract (*Anredera cordifolia* (Ten.) Steenis) ointment on wound healing in rats (*Rattus norvegicus*). This was a laboratory experiments conducted in Pharmacology laboratory Jurusan Farmasi Poltekkes Kemenkes Manado with pre and post control group design. The sample used in this study is an ointment of 10% Binahong leaf extract and emulsion base of ointment. The subjects in this study divided into 3 treatment groups with each group consisted of 5 rats, ie negative control treatment group using the ointment base, positive control group using Kalmicetin ointments and treatment group using Binahong leaf extract ointment. Measurement of the diameter of the wound in rats performed every day during the 7 days of treatment. The data analysed with one-way ANOVA. The results of the data analyzed showed a significant relationship between the diameter of the wound and wound healing with significant value of 0.000 ($p < 0.05$). It can concluded that the Binahong leaf extract ointment has wound healing effect on rats.

Keywords: Binahong leaf (*Anredera cordifolia* (Ten.) Steenis), Ointment, wound healing.

INTRODUCTION

Traditional medicines used by the community as one of the alternatives treatment. Reasons for the selection of traditional medicine as an alternative treatment because it is relatively inexpensive, has no side effects when used as recommended, in addition to the traditional medicine is also effective to cure certain diseases refractory to use modern medicines, such as tumors and cancers (Susetya, 2012).

Traditional medicinal plants are often used by people to overcome various diseases are binahong (*Anredera cordifolia* (Ten.) Steenis). Plant parts such as roots, stems, flowers and leaves can be used to address a variety of diseases. Binahong leaves are very nutritious part of the plant that is trusted by generations can cure some diseases, such as wound healing (Shabella, 2012).

Chemical constituents contained in the leaves binahong are flavonoids, saponins triterpenoids (oleanolik acid), protein, vitamin C has an important role in the wound healing process, which flavonoids and saponins triterpenoid function as antibiotics and antioxidants that can serve as a powerful toxin to kill bacteria, whereas protein and vitamin C plays a role in the reproductive process of damaged cells and accelerate wound healing (Susetya, 2012).

Wound is a unitary component damage body tissues due to trauma sharp objects or blunt objects, explosions, chemical substances, changes in temperature, electric shock, or animal bites. Effects of wound healing is a process that subsequently occurs in damaged tissue. Wound healing can occur naturally, but it takes a long time for the healing process (Sjamsuhidajat & de Jong, 1997). Ointment is an alternative treatment that is often used to

accelerate the wound healing process. Ointment is one of the topical dosage form that is applied to the skin and mucous membranes, and dispersed homogeneously in a suitable ointment base (Ansel, 1989). Ointment used in this study, an ointment results of laboratory studies conducted by Natalie Sumolang using leaf extract formulations binahong 10% and ointment base which can be cleaned with water.

Based on the description above, the authors are keen to continue research to test the effectiveness of the leaf extract ointment binahong (*Anredera cordifolia* (Ten.) Steenis) on wound healing in rats (*Rattus norvegicus*). The problem is whether the ointment binahong leaf extract (*Anredera cordifolia* (Ten.) Steenis) can heal wounds in rats (*Rattus norvegicus*)? The aim of this study was to determine the effect of wound healing ointment Binahong leaf extract (*Anredera cordifolia* (Ten.) Steenis) in rats (*Rattus norvegicus*).

MATERIALS AND METHODS

Materials: Basic ointment that can be cleaned with water, Kalmicetin skin ointments, Alcohol 70%

Tools: Mortar and pestle, stirring rod, spatula, scales, vaporizer cup, water baths, measuring cups, scissors, razor feathers, tweezers, surgical blade, sterile gauze, plaster, gloves, cottonbuds, ruler

Research Methods:

This is a laboratory experiments with pre and post control group design.

Research conducted at Pharmacology Laboratory Jurusan Farmasi Poltekkes Kemenkes Manado held in January - June 2013.

Binahong leaf extract ointment formula based on the results of laboratory studies of Natalie Sumolang. Ointment of binahong leaf extract each container weighing 10 grams consist of:

- Binahong leaf extract 1 gram
- Ointment base can be cleaned with water based formula reference Hydrophilic ointment (Gibson, 1990) consists of:

Metil paraben	0,
0026 gram	
Propil paraben	0,0016
gram	
Natrium lauril sulphate	0,107
gram	
Propilenglikol	1,295
gram	
Stearil alkohol	2,698
gram	
White Vaseline	2,698
gram	
Aquadest	3,994
gram	

Procedure :

- Preparation of ointment base that used as a negative control (Anief, 1993) : Prepared tools and materials. Weighed materials to be used, heated stearyl alcohol, white vaseline and propyl parabens, in the vaporizer cup above the water bath to a temperature of 75° C (oil phase). Heated propilenglikol, water, and methyl paraben in the vaporizer cup to a temperature of 75° C (water phase). When the temperature has reached 75° C, was added sodium lauryl sulfate in the water phase. Oil phase was transferred into a mortar and then add the water phase, crushed until homogeneous, with keeping temperature of 75° C. Weighed as much as 10 grams and then put in a pot of ointment
- Preparation of Animal test (Malole & Pramono, 1989): animals used were rats (*Rattus norvegicus*) between 6-8 weeks old weighing between 150-250 grams. Rats that will be tested is obtained from the Pharmacology laboratory Jurusan Farmasi.
- Making wound (Malole & Pramono, 1989) : rats to be tested, sheared on the back the day before the making of the wound. Before the injured part shaven cleaned with alcohol 70% and a marked forming area of 1 cm². Wounds made by lifting the skin with tweezers, then sliced using a surgical blade to the subcutaneous part. Then binahong leaf extract ointment,

ointment base, Kalmicetin ointment applied to each group of animal test.
 4. Procedures research : Rats divided into 3 groups: Group I was given an ointment base (negative control), group II was given kalmicetin ointment (positive control) and group III was given binahong leaf extract ointment. Injured rats \pm 1 cm² broad form, performed the same treatment in all rats. Then the wound was covered with sterile gauze. Performed extensive measurements injuries before being treated. Each treatment 3 times a day smeared with ointment base, kalmicetin skin ointments, binahong leaf extract ointment. Observed by measuring the diameter of the wound closure using the bar every day for 7 days.

Data Analysis

Data obtained from the results of measuring the diameter of the wound using a ruler on each group of test animals. Data analysis was conducted using oneway ANOVA (Analysis Of Variant).

RESULT AND DISCUSSION

Result

The results of the average diameter measurements of the wound healing process in animals white mice for 7 days of observation can be seen in Table 1 below.

Table 1. Table of measurement results of the average diameter of rat wound day 0 to day 7

	Diameter of wound (cm)		
	Ointment base (Control negative)	Kalmicetin ointment (Control Positive)	Binahong leaf Extract ointment
0	1,24	1,21	1,25
1	1,22	1,13	1,12
2	1,16	1,01	1,01
3	1,06	0,90	0,90
4	0,93	0,77	0,76
5	0,81	0,60	0,68
6	0,73	0,50	0,38
7	0,59	0,25	0,26

To compare the percentage of wound healing among treatments, then the average diameter of the wound for each wound dipersentasekan to the average diameter of the wound before treatment (day 0) was considered 0.00% can thus be said that the percentage of wound healing before treatment in all study subjects is the same. The results of the percentage of

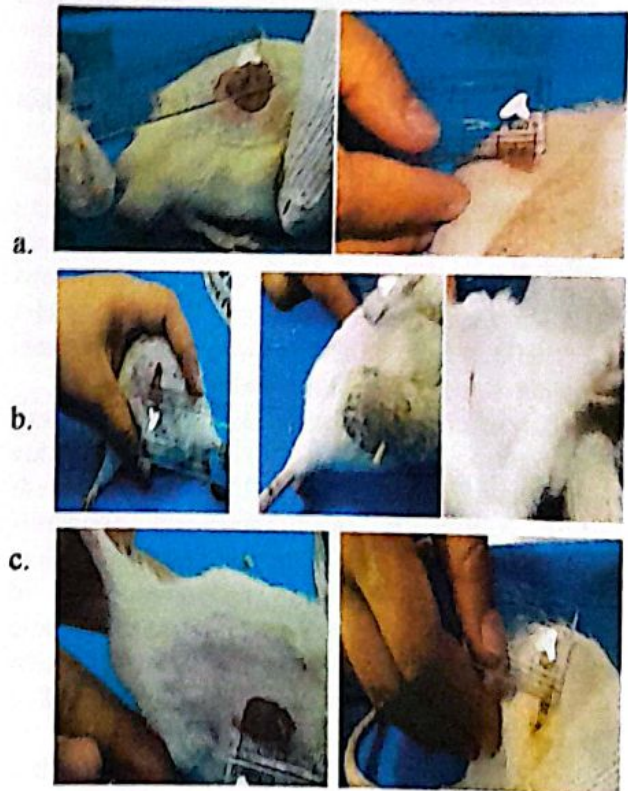
wound healing in each treatment group can be seen in the table below:

Table 2. Table average yield percentage of wound healing day 0 to day 7.

Table 2. Table average yield percentage of wound healing day 0 to day 7.

Day	Percentage of wound healing (%)		
	Ointment base (Control negative)	Kalmicetin ointment (Control Positive)	Binahong leaf Extract ointment
H0	0,00	0,00	0,00
H1	1,61	6,61	10,40
H2	6,45	16,52	19,20
H3	14,45	25,61	28,00
H4	25,00	36,36	39,20
H5	34,67	50,41	45,60
H6	41,12	58,67	69,60
H7	52,42	79,33	79,20

Wound healing of each group can be seen in the picture below.



a : control negative group (ointment base), day 0 and day 7
 b : control positive group (kalmicetin ointment), day 0 and day 7
 c : Binahong leaf extract ointment, day 0 and day 7

Based on these data do statistical calculations using ANOVA method to see whether there is a wound healing effect that the results can be seen in Table 3 below.

Table 3. Table of test results ANOVA method ANOVA

Sun of Squares	df	Mean Square	F	Sig.	
Between Groups	10.870	23	.473	32.077	.000
Within Groups	1.414	96	.015		
Total	12.284	119			

ANOVA test results can be seen the value of $F = 32.077$ with significant value of 0.000, which is less than 0.005 means ointment Binahong leaf extract has the effect of wound healing in rats.

Discussion

Binahong leaves (*Anredera cordifolia* (Ten.) Steenis) is one of the herbs that can be used for wound healing. Chemical constituents contained in Binahong leaves are flavonoids, saponins triterpenoids, protein, vitamin C has an important role in the wound healing process, which flavonoids and saponins triterpenoid function as antibiotics and antioxidants that can serve as a powerful toxin to kill the bacteria, whereas protein and vitamins C plays a role in the reproductive process of damaged cells that can accelerate the wound healing process.

Ointment is an alternative treatment that is often used in accelerate the wound healing process. Ointment used in this study is the leaf extract ointment Binahong 10% and ointment base which can be cleaned with water. The ointment is the result of laboratory research Natalie Sumolang.

Rats used in this study wounded in the back with a surgical blade. There are weaknesses in the process of making cuts in rats caused by conditions that they still moving so resulting varies of diameter wound. The rats were divided into 3 treatment groups ie group

ointment base as a negative control, group Kalmicetin ointment as positive control and group Binahong leaf extract ointment. Each treatment group consisted of 5 rats.

Based on the observation that the negative control group ointment base has a wound healing effect is smaller than the positive control group and the group that Kalmicetin ointment ointment Binahong leaf extract. Data observation for 7 days showed negative control group had a wound healing effect on rats by 52.42%, whereas the positive control group and the group has a 79.33% ointment Binahong leaf extract has 79.2% wound healing effect on rat.

Negative control group had a wound healing effect is smaller than the positive control group and the group Binahong leaf extract ointment because it contains only basic ointment. Wound healing effect on the negative control group were simply smeared with ointment base shows that untreated wound healing naturally will experience although it takes a long healing time.

Positive control group that ointment Kalmicetin has good healing effect of the negative control group because Kalmicetin ointment contains 20 mg of chloramphenicol. Mechanism of action of chloramphenicol inhibits protein synthesis in bacterial cells so that the healing process can take place either.

Binahong leaf extract ointment group has a healing effect better than the negative control group due to the chemical content of the leaves are flavonoids and saponins Binahong triterpenoids as antibiotics and antioxidants which serves as a powerful toxin to kill the bacteria. Binahong leaves also contain protein and vitamin C, which plays a role in the reproductive process of damaged cells and accelerate wound healing.

Based on the observation for 7 days followed by a systematic analysis of these variables using ANOVA statistical test showed that all three treatment groups had a healing effect on the diameter of the wound in mice by showing the significant value of 0.000 ($p < 0.05$). It can be concluded that the leaf extract

ment Binahong have an effect on wound
healing in rats.

Conclusion

After doing research and data analysis, it can
conclude that the Binahong (*Anredera
difolia* (Ten.) Steenis) leaf extract ointment
has a wound healing effect.

Suggestion

It is needed to develop the use of leaf Binahong
in the pharmaceutical field, particularly in the
formulation of the wound ointment Binahong
leaf extract. Because ointment Binahong leaf
extract has been shown to have an effect on
wound healing.

Acknowledgement

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