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ORIGINAL RESEARCH

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## BINAHONG LEAVES (ANREDERA CORDIFOLIA TENORE STEEN) EXTRACT AS AN ALTERNATIVE TREATMENT FOR PERINEAL WOUND HEALING OF POSTPARTUM MOTHERS

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### Abstract

**Background:** Perineal wounds are at risk for infection, without a good treatment, perineal wound can harbor sepsis and become a chronic, long-term problem. Binahong leaves is considered as an alternative to accelerate perineal wound healing process.

**Objective:** To determine the effect of Binahong leaf extract (*anredera cordifolia* (tenore) steen) on perineal wound healing process in postpartum mothers.

**Methods:** This study employed a quasi-experimental study with control group posttest-only design. The study was conducted in the working area of Telogosari Wetan Health Center and Health Center of Kulon Kota Semarang Indonesia in January-February 2017. There were 36 respondents selected using purposive sampling assigned in the intervention group (Binahong leaves extract) and the control group (Povidone Iodine 10%). REEDA scale was used for assessing perineal healing. Data were analyzed using Mann Whitney, Chi Square and Kruskal Wallis test.

**Results:** Findings showed that the average day of perineal wound healing process in the Binahong leaves group was 6.11 days and in the povidone iodine group was 7.66 days. There was a statistically significant difference in the duration of wound healing between the experiment and control group with p-value 0,001 (p value <0.05).

**Conclusion:** Binahong leaves extract is effective in healing perineal wound in postpartum mothers. Therefore, Binahong leaves are recommended to use as an alternative treatment for the mothers.

**Keywords:** Binahong leaves; perineal wound; postpartum mother

### INTRODUCTION

The period of the birth of the placenta and the fetal membrane is a mark of the final period of intrapartum to the return of the female reproductive tract in nonpregnant conditions. This period is also called the puerperium period, and the woman with puerperium is called puerperal. Postpartum recovery lasts about six weeks ([Mohamed & El-Nagger, 2012](#)). Recent studies of morbidity

experienced by mothers after childbirth indicated that there are some mothers continue to have problems ([Marshall & Raynor, 2014](#)). The birth canal wound may occur due to the head of the fetus being born too soon, labor not being led properly, and the need for episiotomy in order to avoid a wide perineal rupture ([Prawirohardjo, 2006](#)).

Perineal injury from episiotomy, rupture, or laceration is an area that is not easily maintained. In postpartum period, a mother will be susceptible to infection. Infections of this perineal injury can occur because the mother has lack of understanding about how to care for the correct perineal wound, what the benefits and goals of perineal wound care, no pay attention to good personal hygiene which is one of the internal factors that inhibit wound healing ([Prawirohardjo, 2006](#)). Besides, the existence of 50% of an anaerobic Streptococcus bacteria is the cause of infection ([Mochtar, 2011](#)).

This condition if not treated promptly will impact to the maternal mortality rate. Based on the report of the Community Health Center in Semarang City, maternal mortality in 2014 occurred as many as 33 cases from 26,992 live births or about 122.25 per 100,000 live births. Maternal mortality due to infection was 3.03%, with the condition during the puerperium was 54.55%. Based on data from the Health Department in 2015, the maternal mortality rate as many as 35 cases increased from 2014, and the incidence due to infection in 2015 in the working area of the Community of Health Center of Telogosari Wetan was 1 mother and in the working area of the Community of Health Center of Telogosari Kulon was 1 mother ([Dinkes, 2014](#)).

The wound can heal through the primary process (primary intention) that occurs when the edge of the wound is approximated by sewing it. The second healing through secondary processes (secondary intention) as the formation of granulation tissue and wound contraction ([Mochtar, 2011](#)). However, the perineal wound itself will have an impact for the mother that is discomfort disorders ([Prawirohardjo, 2006](#)).

Wound healing process consists of three stages, namely inflammatory stage, proliferative stage, maturation stage. One of the factors that can accelerate the healing of the perineal wound includes vascularization, while factors that can slow wound healing include anemia, age, other diseases, nutrition and stress. Normally the wound can heal for 6-7 days when a mother can do well treatment, on the contrary, if the wound is not

treated properly, then wound healing process becomes longer and can cause infection ([Potter & Perry, 2005](#)). Perineal wound infections due to episiotomy, rupture, or laceration are areas that are not easy to keep clean and dry, the act of cleaning the vulva may provide an opportunity for careful inspection of the perineal area.

On the other hand, perineal wound infections are also common from birth attendant by a shaman who is less concerned with hygiene during labor. If this is not treated promptly, it will lead to cervicitis, endocervical, endometritis, parametritis and palveoperitonitis and abscesses. In response, mother care can be done with local antibiotics, betadine and hygiene to prevent infection, clean the genital area every time after urination and defecation ([Bahiyatun, 2009](#)).

Currently, herbal medicines become a trend in Indonesia, one of which is Binahong leaves. The chemical content contained in the Binahong Plant (*Anredera Cordifolia* (Tenore) Steen) consists of oleanolic acid, antimicrobial, ascorbic acid, saponin triterpenoid flavonoid, and protein ([Adriani et al., 2012](#)). The content in Binahong is also shown to have anti-inflammatory, anti-fever and anti-parasitic effects. This can be an alternative treatment, as povidone iodine 10% only has antiseptic but does not have anti-inflammatory content ([Adriani et al., 2012](#)).

Clinical test on the content of Binahong leaf extract has been done in several previous studies, with the content of Binahong leaf extract, namely flavonoid, saponin, phenol, terpenoid, oleanolic acid, protein, asrobat acid, antimicrobe ([Adriani et al., 2012](#); [Darsana, Besung, & Mahatmi, 2012](#); [Widya, Max, & Gayatri, 2013](#)).

In addition, Adnyana, et al study has done a clinical trial on Binahong leaves in patients with diabetic injuries regarding the extent of minimum inhibitory concentrations (KHM) and minimum killing (KBM) levels against staphylococcus aureus and pseudomonas aeruginosa bacteria ([Adnyana & Sukandar, 2014](#)).

Therefore, this study aimed to examine the effect of Binahong leaf extract on perineal wound healing process.

## **METHODS**

### *Study Design*

A quasi-experimental study with control group posttest-only design

### *Setting*

The research was conducted in the working area of Telogosari Wetan Health Center and Health Center of Kulon Kota Semarang in January-February 2017.

### *Population and Sample*

There were 36 respondents selected using purposive sampling assigned in the intervention group (Binahong extract) and the control group (Povidone Iodine 10%).

The inclusion criteria of the sample were a mother with a normal delivery, parity > 1, postpartum 6-10 hours, postpartum with perineal wound of degree I with no hecting, willing to use Binahong leaf extract for perineal wound treatment (intervention group), and willing to use povidone iodine 10% for the treatment of perineal wound (control group). The exclusion criteria included a mother who had a history of diabetes, BMI <18.4, and had a food obstacle.

### *Intervention*

Binahong leaf extract was administered by dropping 5-10 drops directly on the mother's perineal wound or by dropping 10 drops in sterile gauze and then gently rubbing on the perineal wound of the mother. The dosage given to each mother was 0.5 g (500 mg) of thick extract of Binahong leaf dissolved into using aquadest of 60 ml, then shaved with a special tool until the extract blended with the solvent to obtain 0.8 % of concentration of dose extract leaf Binahong liquid. The use of

Binahong leaf extract was given 2 times per day given during the healing period of the perineal wound. Because the perineal wound in this study was perineal wound level I with no hecting, then it was considered that the wound healing process will last for 6-7 days.

While the control group received perineal wound care using povidone iodine 10% in liquid form. The povidone iodine content of 10%, given 2 times per day. The 10% of iodine administration was performed during perineal wound healing for 7-8 days. At the initial treatment of Binahong leaf extract and povidone iodine 10% provision was assisted by the researcher so that the respondents can perform as recommended by the researcher for the next days.

### *Instruments*

To assess postpartum perineal trauma in this study, the REEDA scale was used. The REEDA scale is a tool for assessing perineal healing that was primarily developed by Davidson ([Davidson, 1974](#)) and later reviewed by Carey ([Alvarenga et al., 2015](#)) It includes five items related to the healing process: hyperemia, edema, ecchymosis, discharge and coaptation of the wound edges (Redness, Edema, Ecchymosis, Discharge, Approximation - REEDA) (see Figure 1). The length of time and level of wound density were measured and observed one day after treatment.

### *Ethical Consideration*

This study has been approved by the Health Research Ethics Committees (K.E.P.K) of the Health Polytechnic of Semarang with number: 033 / KEPK / Poltekkes-SMG / EC / 2017. Prior to data collection, informed consent in each respondent was performed.

### *Data Analysis*

Data were analyzed using Mann Whitney, Chi Square and Kruskal Wallis test.

Points	Redness	Oedema	Echymosis	Discharge	Approximation
0	None	None	None	None	Close
1	Within 0.25 cm of the incision bilaterally	Perineal, less than 1 cm from incision	Within 0.25 cm bilaterally or 0.5 cm unilaterally	Serum	Skin separation 3 mm or less
2	Within 0.5 cm of the incision bilaterally	Perineal and/or between 1 to 2 cm from the incision	Between 0.25 cm to 1 cm bilaterally or between 0.5 to 2 cm unilaterally	Serosan-guinous	Skin and subcutaneous fat separation
3	Beyond 0.5 cm of the incision bilaterally	Perineal and/or vulvar, greater than 2 cm from incision	Greater than 1 cm bilaterally or 2 cm unilaterally	Bloody, purulent	Skin, subcutaneous fat and fascial layer separation
Score					
				Total	

Figure 1 REEDA Scale (Alvarenga et al., 2015)

**RESULTS**

**Characteristics of the respondents based on age, education, changing pad, and Hb level of postpartum mothers**

Figure 2 and 3 show that the average of the respondents' age in the experiment group was 26.56 years old and in the control group was 28.83 years old.

The majority of the respondents had senior high school background. The hemoglobin level in the experiment group was 10.95 gr/dL and in the control group was 10.68 gr/dL. The majority of them between the two groups changed the pads 3-4 times per day.

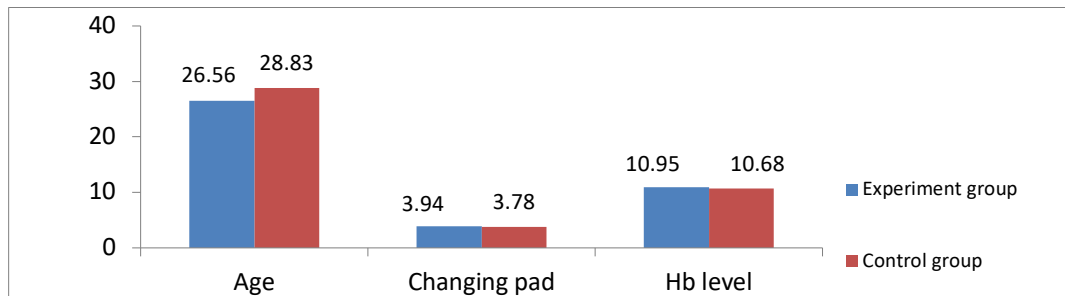


Figure 2 Characteristics of the respondents based on age, changing pad, and Hb level of postpartum mothers

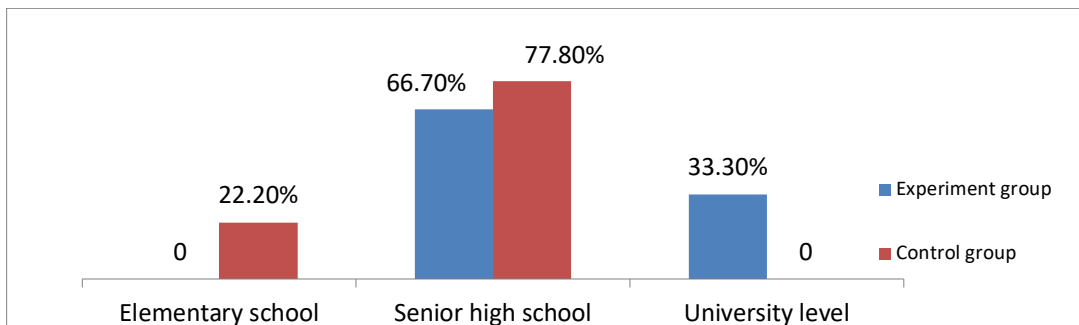


Figure 3 Characteristics of the respondents based on education level of postpartum mothers

**The average day of perineal wound healing process**

As shown in the figure 4, the average day of perineal wound healing process in the experiment group was 6.11 days and in the

control group was 7.66 days. Binahong leaves extract group shows a faster wound healing process compared with healing process in the control group.

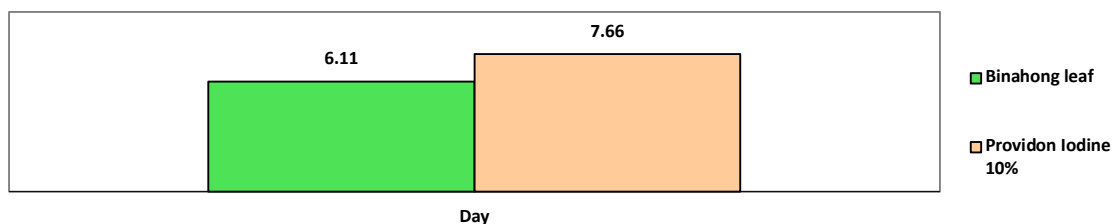


Figure 4 The average day of perineal wound healing process

**Table 1** Change analysis of REEDA (*Redness, Edema, Ecchymosis, Discharge dan Approximation*) in the experiment and control group in the fifth day using Kruskal Wallis

REEDA Dimension	Experiment group	Control group	P-value
Redness	0.61±0.502	1.11±0.232	0.000
Edema	0.06±0.236	0.89±0.323	0.000
Ecchymosis	0.11±0.323	0.50±0.514	0.013
Discharge	0.11±0.323	0.44±0.511	0.028
Approximation	1.00±0.000	1.39±0.502	0.004
REEDA	1.00±0.000	1.11±0.323	0.000

Mean difference of REEDA (*Redness, Edema, Ecchymosis, Discharge dan Approximation*) between the two groups as shown in the Table 1 indicated that REEDA in the experiment group has the lower scores compared with the score in the control group. It could be said the

experiment group with Binahong leaves extract shows a better perineal wound healing. Kruskal Wallis test shows that there was a significant difference of REEDA score between the experiment and control group with p-value in each dimension <0.05.

**Table 2** Analysis of difference of perineal wound healing process using Mann Whitney test

Variable	Group		p-value
Duration of wound healing	Experiment group	Control group	0.000

Mann Whitney test as shown in the table 2 showed p-value 0.000 (<0.05), which indicated that there was a statistically significant difference in the duration of wound healing process between the experiment and control group.

## DISCUSSION

Perineal wound is the missing or damaged part of the body tissue located between the vulva and the anus with an average length of 4 cm (Prawirohardjo, 2006). Wound care in this study is done 3 times by dripping or rubbing the liquid extract of Binahong leaves to the perineal injury. This was done referring to a good time for perineal wound care, namely when bathing, urination, and defecation (at least 3 times per day) by washing the wound area cleanly from the front of the vagina towards the back of the vagina, wipe dry and give antibiotics (Lumbessy, Abidjulu, & Paendong, 2013).

The results of this study were in accordance with previous study indicated that basically perineal wound healing would last for 6-7 days if no infection occurs (Prawirohardjo, 2006). Wound is a process in which the damaged tissue is restored to normal and there will be an inflammatory reaction divided into several phases of wound healing, namely the inflammatory phase that occurs in the 1<sup>st</sup>-4<sup>th</sup> day characterized by erythema, warmth to the skin, edema and pain. The proliferative phase

in the 5<sup>th</sup> - 20<sup>th</sup> day is the formation of granulation tissue to cover defects or injured tissue. The maturation phase occurs on the 21<sup>st</sup> day until one month even reaching the year (Adriani et al., 2012).

Findings of this study revealed that there was a significant effect of Binahong leaf on the perineal wound healing process, and there was a significant difference of REEDA score between the use of Binahong leaves and povidone iodine 10% (one day difference). Thus, it could be said that Binahong leaf has a better result in wound healing process. Binahong leaves are considered having a flavonoid content that serves as anti-inflammatory, anti-septic, antioxidants and analgesic. This is in line with previous study proved that Binahong leaf extract accelerates wound healing in infection in mice (Firdausi, 2015). Supported by Darsana, et al indicated that the higher the Binahong content used, the greater the inhibition of bacterial growth. The mechanism of inhibition of the growth of microorganisms is by destroying the peptidoglycan components in bacterial cells by alkaloids, polyphenols, saponin, flavonoids (Darsana et al., 2012). This study provides the evidence that Binahong leaves are effective to use in the healing process of perineal wound. In addition, Binahong plants are very easy to obtain and planted in home gardening without any special cares.



## CONCLUSION

It can be concluded that Binahong leaves has a significant effect on perineal wound healing process in postpartum mothers. Therefore, Binahong leaves are recommended to use as an alternative treatment for the mothers. However, further research is needed to explore the effect of Binahong leaves for mothers who have hecting perineal wound.

### Declaration of Conflicting Interest

None declared. All authors contributed equally in this study.

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