



## The Effect of Consumption of Red Ginger Extract on the Pain Scale Intensity of Perineal Laceration Wounds in Postpartum Mothers in the Working Area of Jalancagak Health Center, Subang Regency, Indonesia

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### ARTICLE INFO

#### Keywords:

Efficacy  
Perineal laceration  
Postpartum mother  
Red ginger

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The author has reviewed and approved the final version of the manuscript.

<https://doi.org/10.37275/amcr.v4i5.379>

### ABSTRACT

Red ginger can be used as a natural ingredient in making potions used to treat perineal wounds. This study aimed to determine the effect of the consumption of red ginger extract on the intensity of the pain scale for perineal laceration wounds in postpartum mothers in the working area of Jalancagak Health Center, Subang Regency, Indonesia. This study is a quasi-experimental design with a pretest and post-test with a control group research design. This study used two groups, namely a control group and an intervention group. The pain scale was measured before (pretest) in the intervention and control groups and after (posttest) in the control and intervention groups. The intervention group was given red ginger extract and still received standard management procedures in the form of analgesics, while the control group was only given standard management procedures. A total of 30 research subjects took part in this study and were grouped into a control group and an intervention group. Administration of red ginger extract showed the potential to reduce pain intensity statistically significantly,  $p < 0.05$ . Similar results were also shown in the control group, where placebo administration was able to reduce pain intensity statistically significantly,  $p < 0.05$ . The reduction in pain intensity was more optimal in the treatment group compared to the control group,  $p < 0.05$ . In conclusion, there is an effect of the consumption of red ginger extract on the intensity of the pain scale for perineal laceration wounds in postpartum mothers in the working area of Jalancagak Health Center, Subang Regency, Indonesia.

### 1. Introduction

A perineal laceration is a medical term that refers to a tear or wound in the perineum area, which is the area located between the vulva (the outer part of the female genital organ) and the anus. Perineal lacerations often occur during labor or the birth of a baby and generally occur in postpartum mothers (mothers who have just given birth). This is a common complication during vaginal delivery. The potential for infection from perineal lacerations is one complication that needs to be considered and avoided during postpartum recovery. When a perineal laceration occurs, there is a risk that bacteria from the surrounding environment or from the woman's genital

area can enter the wound, causing infection. The perineal area is often moist after delivery, which can create a suitable environment for bacterial growth. During delivery, dirt and bacteria from the anus and the surrounding environment can enter the perineal laceration wound. Poor postpartum care or inadequate hygiene of the perineal area can increase the risk of infection. Not caring for perineal lacerations properly, including maintaining cleanliness and caring for stitches if present, can increase the risk of infection. Infection of a perineal laceration can cause symptoms such as redness, swelling, excessive pain, purulent discharge from the wound, or fever. One of the main goals of treatment is to prevent infection. Tears in the



perineum can be an entry point for bacteria and can cause infection if not treated properly.<sup>1-3</sup>

Red ginger is a plant that has been used traditionally in medicine and wound care for centuries. Red ginger contains an active compound called gingerol, which has anti-inflammatory, antimicrobial, and antioxidant properties. Although much research has been conducted on the benefits of red ginger, its role in perineal wound care may be limited, and it is more often used as a natural ingredient in perineal care. Red ginger can be used as a natural ingredient in making potions or ointments used to treat perineal wounds.<sup>4-6</sup> This study aimed to determine the effect of the consumption of red ginger extract on the intensity of the pain scale for perineal laceration wounds in postpartum mothers in the working area of Jalancagak Health Center, Subang Regency, Indonesia.

## 2. Methods

This study is a quasi-experimental design with a pretest and post-test with a control group research design. This study used two groups, namely a control group and an intervention group. The pain scale was measured before (pretest) in the intervention and control groups and after (posttest) in the control and intervention groups. The intervention group was given red ginger extract and still received standard management procedures in the form of analgesics, while the control group was only given standard management procedures. A total of 30 research subjects took part in this study and were grouped into a control group and an intervention group. The research subjects have met the inclusion criteria. The research subjects are pregnant women who have just given birth in the working area of the Jalancagak

Health Center, Subang Regency, Indonesia, and the research subjects have agreed to take part in this study, which is proven by signing an informed consent form.

After 2 hours of giving birth, the control group was given red ginger extract, where the preparation of red ginger was made by 250 mg of fresh red ginger grated, 250 mg brown sugar (1:1), and 400 cc of water then cooked until boiling until 200 cc of water remained. This preparation is taken 3x200 cc for 3 days. The control group was given to drink 200 cc of water 3 times a day for 3 days. Next, the research subjects observed the pain scale using the visual analog scale (VAS). The result of using the VAS pain scale is a numerical score that reflects the intensity of pain. This score is often given as a number from 0 to 10, with 0 indicating no pain and 10 indicating maximum pain. Data analysis was carried out using SPSS version 25 software. Univariate and bivariate analyses were carried out in this study. Univariate analysis was carried out to present the frequency distribution of each test variable. Bivariate analysis was carried out to present the relationship between test variables, where the p-value <0.05.

## 3. Results and Discussion

Table 1 presents a comparison of pain intensity between groups. Administration of red ginger extract showed the potential to reduce pain intensity statistically significantly, p<0.05. Similar results were also shown in the control group, where placebo administration was able to reduce pain intensity statistically significantly, p<0.05. The reduction in pain intensity was more optimal in the treatment group compared to the control group, p<0.05.

Table 1. Comparison of pain between groups.

Variable	Treatment group			Control group			P-value**
	Pre	Post	P-value*	Pre	Post	P-value*	
VAS	4,67±1,23	1,28±0,89	0,000	4,83±1,09	3,21±0,78	0,000	0,000

\*Dependent t-test, p<0,05

\*\*Independent t-test, p<0,05.



*Zingiber officinale* var. *rubrum*, known as red ginger, is a type of ginger that has a spicier taste and redder color than regular ginger. Red ginger also contains secondary metabolite compounds, which can provide anti-inflammatory benefits and support the wound-healing process. Gingerol is the main compound in red ginger, which gives it its spicy taste and distinctive aroma. This is a compound that has been widely studied for its anti-inflammatory and antioxidant properties. Gingerol has been shown to reduce inflammation by inhibiting the activity of proinflammatory enzymes, reducing the release of inflammatory substances, and influencing certain inflammatory pathways. Gingerol has potential as an anti-inflammatory agent because of its ability to inhibit various stages in the inflammatory process. This includes its ability to inhibit the activity of proinflammatory enzymes, such as cyclooxygenase (COX) and lipoxygenase (LOX), which play a role in the formation of inflammatory mediators such as prostaglandins and leukotrienes. By inhibiting these enzymes, gingerol can help reduce the production of pro-inflammatory substances. Gingerol has also been shown to reduce the release of inflammatory substances from immune cells and cells involved in inflammation. This contributes to reducing inflammation and excessive immune response. Gingerol can influence certain inflammatory pathways in the body, such as the NF- $\kappa$ B (nuclear factor kappa-light-chain-enhancer of activated B cells) pathway, which is an important signaling pathway in inflammation. By modulating these pathways, gingerol may help reduce excessive inflammatory reactions.<sup>7-9</sup>

Shogaol is a compound formed from gingerol during the processing or heating of red ginger. Shogaol also has strong anti-inflammatory properties and can reduce inflammatory reactions in the body. Shogaol is formed when gingerol undergoes dehydration or chemical changes during red ginger processing, such as drying or heating. During this process, one of the hydroxyl groups (OH) in the gingerol structure is

removed, producing shogaol. Shogaol has been found to have higher anti-inflammatory potential than gingerol. Just like gingerol, shogaol can inhibit the activity of pro-inflammatory enzymes such as COX and LOX, which produce inflammatory mediators such as prostaglandins and leukotrienes. This helps reduce the production of pro-inflammatory substances that cause inflammation. Shogaol can reduce inflammatory reactions in the body by affecting various signaling pathways involved in inflammation, including inhibition of the NF- $\kappa$ B pathway. This contributes to reducing excessive inflammatory responses. Apart from its anti-inflammatory effects, shogaol can also reduce the body's response to pain. This can help relieve pain associated with inflammation.<sup>10-12</sup>

Zingiberene is the compound that gives red ginger its aroma. Although not yet fully understood in the context of wound healing, zingiberene has the potential as an anti-inflammatory agent due to its chemical properties. Red ginger also contains essential oils which contain various compounds with anti-inflammatory potential, such as sesquiterpenes and sesquiterpenoids. Zingiberene is one of the compounds in red ginger that gives it its distinctive aroma. Although not yet fully understood in the context of wound healing, zingiberene has the potential as an anti-inflammatory agent due to its chemical properties. As a sesquiterpene compound that can be found in red ginger essential oil, zingiberene can contribute to the effects of reducing inflammation and relieving pain. The essential oil in red ginger contains various active compounds, including sesquiterpenes and sesquiterpenoids, which have anti-inflammatory potential. Some of the significant essential oil compounds in red ginger include zingiberene,  $\beta$ -bisabolene, and  $\beta$ -sesquiphellandrene. These compounds may help reduce inflammation by inhibiting proinflammatory enzymes and inflammatory signaling pathways. The anti-inflammatory effects of these compounds help



relieve inflammation and may reduce the pain and discomfort associated with wounds. Additionally, the antioxidant properties of these compounds may help protect skin cells from oxidative damage, which may promote better wound healing.<sup>13-15</sup>

#### 4. Conclusion

There is an effect of the consumption of red ginger extract on the intensity of the pain scale for perineal laceration wounds in postpartum mothers in the working area of Jalancagak Health Center, Subang Regency, Indonesia.

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