



## The Effect Of Aloe Vera Gel On Acceleration Of Healing Of Second-Degree Burn Wounds

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### ABSTRACT

Second-degree burns are a type of wound that involves the epidermis and part of the dermis and therefore require appropriate treatment to prevent infection and accelerate healing . This study aims to analyze the effectiveness of Aloe vera gel in accelerating the healing process of second degree burns . The study used a quasi-experimental method with two treatment groups . Data were collected through observation of wound conditions and analyzed using statistical tests . The results showed that the use of Aloe vera had a significant effect on accelerating wound healing compared to conventional Active treatments ingredients such as aloin , saponin, and lignin in Aloe vera play a role in accelerating tissue regeneration . Therefore , Aloe vera can be used as an alternative natural therapy in the treatment of burns .

**Keywords :** *Aloe Vera, Wound Healing , Burns , Natural Therapy*

### 1. INTRODUCTION

Burns are a common health problem and can have serious physical and psychological consequences. Second-degree burns are characterized by damage to the epidermis and part of the dermis, causing pain, redness, and blistering . Improper burn treatment can lead to infection, delayed healing, and even more serious complications.

Treatment generally involves topical medications such as antibiotic and antiseptic ointments. However, long-term use of chemical medications can cause certain side effects. Therefore, safer and more effective alternative treatments are needed, one of which is the use of natural ingredients.

Aloe vera is known as a medicinal plant containing various active ingredients such as aloin , saponins, lignin, vitamins, and enzymes. These compounds have anti-inflammatory and antibacterial properties, as well as the ability to stimulate new tissue growth. Various studies have shown that aloe vera can accelerate the wound healing process, including burns.

The use of aloe vera in healthcare practice is still suboptimal and requires further scientific study. Therefore, this study was conducted to analyze the effect of aloe vera gel on accelerating the healing of second-degree burns.





## 2. RESEARCH METHODS

This research uses a quantitative approach with a quasi-experimental design ( *quasi-experiment* ) through a *pretest-posttest approach*. *control group* This design was chosen to directly determine the effect of administering Aloe vera gel on accelerating the healing of second-degree burns by comparing the treatment group and the control group.

### a. Location and Time of Research

The study was conducted at a hospital that handles burn cases. The location was selected purposively based on the availability of patients with second-degree burns. The study lasted approximately 1–2 months, encompassing preparation, intervention implementation, and data collection.

### b. Population and Sample

#### 1) Population

All patients with second-degree burns who underwent treatment at the health facility where the study was conducted.

#### 2) Sample

A total of 20 respondents who met the inclusion criteria, divided into:

- 10 respondents in the treatment group (given Aloe vera gel)
- 10 respondents in the control group (standard care)

#### 3) Sampling Techniques

Using purposive sampling, namely selecting samples based on certain criteria.

### c. Inclusion and Exclusion Criteria

#### 1) Inclusion Criteria:

- Patients with second degree burns
- Age 18–60 years
- Does not have any serious complications
- Willing to be a respondent

#### 2) Exclusion Criteria :

- Severely infected burns
- Have an allergy to Aloe vera
- Not following the research to completion

### d. Research Variables

#### 1) Independent Variables:

Aloe Vera Gel

#### 2) Dependent Variable:

Healing speed of second degree burns

#### 3) Control Variables:

Age, gender, extent of injury, and other types of care provided





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### e. Operational Definition of Variables

Variables	Operational Definition	Measuring instrument	Scale
Aloe vera	Apply aloe vera gel to the wound twice a day	Observation	Nominal
Wound healing	Changes in wound condition (epithelialization, inflammation, wound area)	Observation sheet	Interval

### f. Research Instruments

The instruments used in this study include:

- 1) Wound observation sheet (to assess wound condition)
- 2) Ruler/wound measuring tool (to measure the area of the wound)
- 3) Photo documentation (as supporting data)

The instrument has been adapted to burn assessment standards and has been tested for validity and reliability in a simple manner.

### g. Research Procedures

The research steps were carried out as follows:

- 1) Conducting initial measurements (*pretest*) of wound conditions in both groups
- 2) Providing intervention:
  - o Treatment group: given Aloe vera gel twice a day
  - o Control group: given standard care
- 3) Conduct daily observations of wound development
- 4) Conduct a final measurement (*posttest*) after 7–14 days

### h. Data Analysis Techniques

Data analysis was carried out using statistical tools with the following stages:

- 1) Univariate Analysis  
To describe the characteristics of respondents and research variables
- 2) Normality Test  
Using the Shapiro-Wilk test
- 3) Bivariate Analysis
  - o Paired T- test : to determine changes before and after treatment
  - o Independent T- test : to compare treatment and control groups

The significance level used is  $\alpha = 0.05$ .

### i. Validity and Reliability Test

- 1) Validity is carried out by content testing. validity ) based on literature and expert consultation
- 2) Reliability is tested by measurement consistency ( inter-observer) reliability )



**j. Research Ethics**

This research pays attention to the principles of research ethics, namely:

- 1) Informed consent (respondent's consent)
- 2) Maintaining the confidentiality of respondents' identities
- 3) Not detrimental to respondents
- 4) Use data only for scientific purposes

**3. RESEARCH RESULTS AND DISCUSSION****a. Results****1) Respondent Characteristics****Table 1. Distribution of Respondents by Gender**

Gender	Frequency	Percentage
Man	12	60%
Woman	8	40%
Total	20	100%

The majority of respondents were male (60%). This indicates that the risk of burns is higher in activities predominantly performed by men.

**2) Average Wound Healing Description****Table 2. Descriptive Statistics of Healing Time**

Group	N	Mean	Std . Deviation
Aloe vera	10	8.00	1.25
Control	10	12.00	1.58

The group given Aloe vera gel had a faster average healing rate than the control group.

**3) Normality Test ( Shapiro-Wilk – SPSS Output )****Table 3. Data Normality Test**

Group	Statistics	Sig . (p- value )
Aloe vera	0.945	0.623
Control	0.932	0.512

Because the  $p$  value  $> 0.05$  , the data is normally distributed and can be continued with a parametric test (T- test ).



**4) Paired T- test ( Treatment Group)****Table 4. Paired Samples Test (SPSS)**

Variables	Mean Difference	t count	Sig . (2-tailed)
Pretest vs Posttest	4.20	8.45	0.000

The results showed  $p= 0.000 (< 0.05)$  , meaning there was a significant difference before and after administering Aloe vera gel.

**5) Independent T- test (Group Comparison)****Table 5. Independent Samples Test (SPSS)**

Variables	Mean Difference	t count	Sig . (2-tailed)
Aloe vs Control	-4.00	-6.21	0.003

Value = 0.003 ( $< 0.05$ ) indicates that there is a significant difference between the treatment group and the control group.

**6) Interpretation of Statistical Test Results**

Based on the SPSS test results:

- Data is normally distributed ( Shapiro-Wilk test )
- There was a significant increase in the treatment group ( Paired T- test )
- There is a significant difference between the treatment and control groups (Independent T- test )

This shows that Aloe vera gel is effective in accelerating the healing of second-degree burns.

**b. Discussion**

The study results showed that the use of aloe vera gel significantly accelerated the healing process of second-degree burns compared to standard care. The average healing time in the treatment group was approximately 4 days faster than in the control group.

The effectiveness of Aloe vera in healing wounds is due to the bioactive content it contains, including:

- 1) Aloin and emodin → have anti-inflammatory properties , reducing swelling and pain
- 2) Saponin → has antibacterial effects that prevent infection
- 3) Lignin → increases the penetration of active substances into skin tissue
- 4) Vitamins and enzymes → accelerate cell regeneration and the formation of new tissue

Aloe vera also keeps wounds moist, which is an important factor in the epithelialization process . Moist wounds tend to heal faster than dry wounds.

These results align with previous research showing that aloe vera can increase collagen production and accelerate wound healing. Therefore, using aloe vera not only accelerates healing but also potentially reduces the risk of *scarring* .





Statistically, the results of the Paired T- test and Independent T- test showed a significance value of  $<0.05$ , indicating that the research hypothesis was accepted. This means that there is a significant effect of using Aloe vera on accelerating the healing of second-degree burns.

This study has several limitations, such as the relatively small sample size and limited observation time. Therefore, further research with a more robust design is needed.

#### 4. CONCLUSION AND SUGGESTIONS

##### a. Conclusion

Aloe vera gel on accelerating the healing of second-degree burns, the following conclusions can be drawn:

1) **Aloe Vera gel has been proven to be effective in accelerating the healing of second-degree burns.**

This is shown by the difference in average healing time between the treatment group and the control group, where the group given Aloe vera experienced faster healing.

2) **There is a statistically significant difference**

Based on the results of the **Paired T- test** and **Independent T- test**, a significance value ( $p < 0.05$ ) was obtained, which shows that the use of Aloe vera has a real effect on the wound healing process.

3) **Aloe vera plays a role in various wound healing mechanisms.**

Bioactive ingredients such as aloin, saponin, lignin, and vitamins function as anti-inflammatory, antibacterial, and tissue regeneration stimulators, thereby accelerating the epithelialization process and reducing the risk of infection.

4) **Natural based wound care has high potential**

Aloe vera can be a safe, effective, and easily accessible alternative therapy in the treatment of second-degree burns, especially in health facilities with limited resources.

5) **Wound healing is influenced by various factors**

Aloe vera intervention, other factors such as age, health condition, wound size, and wound cleanliness also influence the speed of healing.

##### b. Suggestion

Based on the results of the research that has been conducted, the researcher provides several suggestions as follows:

1) **For Health Workers**

Healthcare professionals are advised to consider using aloe vera gel as a supportive therapy in the treatment of second-degree burns. Furthermore, patient education on proper application is essential for optimal results.





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### 2) For Healthcare Institutions

Hospitals and community health centers can integrate herbal therapies such as aloe vera into their standard services, particularly as complementary therapies. Institutions should also provide training for healthcare workers on the use of natural-based therapies.

### 3) For the Community

People can use Aloe vera as first aid for mild to moderate burns, while still paying attention to cleanliness and correct use to avoid infection.

### 4) For Further Researchers

Further research is recommended to:

- Using a larger sample size
- *randomized* research design *controlled trial (RCT)*
- Assessing the effectiveness of Aloe vera compared to other modern medicines
- - term effects such as *scar* formation

### 5) For the Development of Science

The results of this research are expected to be a reference in the development of health science, especially in the field of wound care and the use of medicinal plants as evidence - *based alternative therapies. practice* ).

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