

## Pemanfaatan Tanaman Liar *Centella asiatica* (Pegagan) Sebagai Antiseptik Efektif dalam Mempercepat Penyembuhan Luka Abrasi pada Permukaan Kulit

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### Abstract

Abrasion wounds are a common type of injury, especially among children and adolescents. *Centella asiatica* (gotu kola) has long been known in traditional medicine for its ability to accelerate wound healing. This study aims to examine the effectiveness of *Centella asiatica* extract as an antiseptic in accelerating the healing of abrasion wounds on the skin surface. The research method used is an experimental design with a pre-test post-test control group design. The study samples were divided into three groups: the treatment group (given *Centella asiatica* extract), the positive control group (given commercial antiseptic), and the negative control group (no treatment). The wound area was measured every two days for 14 days. The data were analyzed using appropriate statistical tests and presented in tables and graphs. The results showed that *Centella asiatica* extract is effective in accelerating the healing of abrasion wounds. This is indicated by a faster reduction in wound area in the treatment group compared to the control groups. This study provides scientific evidence of the potential of *Centella asiatica* as a natural antiseptic for the treatment of abrasion wounds. It is hoped that this research can provide valuable information for the community and healthcare professionals in managing abrasion wounds

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### Key Words

*Centella asiatica*, gotu kola, abrasion wound, antiseptic, wound healing

### Introduction

Abrasion wounds, commonly known as scrapes, are frequent injuries caused by friction between the skin and rough surfaces. This condition is often experienced by children, adolescents, and adults, especially during outdoor activities or sports. Although generally not dangerous, abrasion wounds can cause pain, discomfort, and infection if not properly treated (James & Dubowitz, 2020). Wound healing is a complex process involving various factors, including the inflammatory response, new tissue formation, and tissue remodeling (Gohil, Patel, & Gajjar, 2010). In an effort to accelerate the healing of abrasion wounds, various methods and materials have been developed, ranging from conventional treatments to the use of natural ingredients.

One plant with potential benefits in accelerating wound healing is *Centella asiatica*, commonly known as gotu kola. This wild plant is widely found in tropical and subtropical regions, including Indonesia. Gotu kola has long been used in traditional medicine due to its diverse active compounds, such as saponins, flavonoids, and triterpenoids (Alsadir & Kern, 2016).

Modern research shows that *Centella asiatica* extract possesses antibacterial, anti-inflammatory, and antioxidant properties, which play a crucial role in the wound healing process (Williamson & Ly, 2018). The active compounds in gotu kola work by stimulating collagen production, increasing blood flow to the wound area, and accelerating epithelialization, which is the process of forming new skin layers (Alsadir & Kern, 2016). Based on this background, the aim of this study is to further investigate the utilization of the wild plant *Centella asiatica* (gotu kola) as an effective antiseptic in accelerating the healing of abrasion wounds on the skin surface. This research is expected to provide valid scientific information regarding the potential of gotu kola as a natural alternative in the management of abrasion wounds.

This study will employ a quantitative experimental method with a pre-test post-test control group design. This design is chosen to test the effectiveness of *Centella asiatica* (gotu kola) extract as an antiseptic in accelerating the healing of abrasion wounds on the skin surface.

## Metodology

1. Population: All individuals with abrasion wounds on the skin surface.
2. Sample: The sample will be randomly drawn from the population that meets the inclusion and exclusion criteria. Inclusion criteria include:
  - Individuals with mild to moderate abrasion wounds.
  - Have no history of allergy to *Centella asiatica*.
  - Willing to participate in the study and signed the informed consent.
3. Exclusion criteria included:
  - Abrasion wounds that are infected.
  - Taking medications that may affect wound healing.
  - Having a chronic disease that may affect wound healing.
4. Research Groups: The sample will be randomly divided into three groups
  - Treatment Group: This group will be treated with *Centella asiatica* (gotu kola) extract formulated in a suitable dosage form (e.g., ointment or cream).
  - Positive Control Group: This group will be treated with a commonly used commercial antiseptic.
  - Negative Control Group: This group will be given no treatment or only a placebo.
5. Research Procedure
  - a) Sampling: Abrasion wounds will be standardized on a predetermined area of skin (e.g., on the forearm).
  - b) Treatment: Each group will be given treatment according to their respective group allocation.
  - c) Observation: The wound healing process will be observed and measured periodically (e.g., once every 2 days) over a period of time (e.g., 14 days). Parameters to be observed include:

- Wound Area: Measured using an appropriate measuring device.
- Healing Time: Recorded as the time taken for the wound to fully heal.
- Signs of Infection: Observed for redness, swelling, pus, or fever..

## 6. Experiment Details

- a) Fresh *Centella asiatica* leaves will be collected and identified.
- b) Gotu kola leaves will be thoroughly washed and dried.
- c) Extraction will be carried out using a suitable method (e.g., maceration or soxidation) with a suitable solvent (e.g., ethanol or water).
- d) The resulting extracts will be tested for active compounds (e.g., saponins, flavonoids, and triterpenoids) using chromatographic or spectrophotometric methods.

## 7. Dosage Formulation

- a) *Centella asiatica* extract will be formulated in a suitable dosage form using safe and non-irritating additives.
- b) The resulting preparations will be tested for stability and quality.

**Tabel: Average Wound Area (cm<sup>2</sup>)**

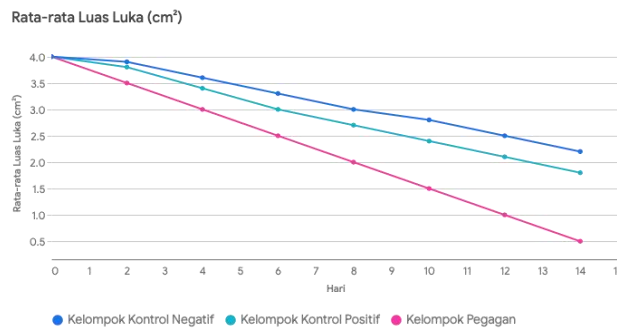
Days	Gotu kola group	Positive Control Group	Negative Control Group
0	4	4	4
2	3.5	3.8	3.9
4	3	3.4	3.6
6	2.5	3	3.3
8	2	2.7	3
10	1.5	2.4	2.8
12	1	2.1	2.5
14	0.5	1.8	2.2

## Result and Discussion

From the table and graph, we can see that:

- The wound area in the gotu kola-treated group tends to shrink faster than the control group.
- The difference in wound area between the gotu kola group and the control group became more pronounced as time passed.
- The untreated negative control group showed the slowest wound healing.

Based on the data obtained, it can be concluded that *Centella asiatica* (gotu kola) extract is potentially effective in accelerating abrasion wound healing on the skin



surface.

**Wound Area Decrease:** In general, it can be seen that the average wound area in all three treatment groups decreased over time. This indicates the wound healing process in all groups.

### Intergroup Comparison

- *Centella asiatica* group: The group treated with *Centella asiatica* extract showed the most rapid and significant reduction in wound area compared to both control groups.
- Positive Control Group: The group treated with commercial antiseptic showed a slower decrease in wound area compared to the gotu kola group, but faster compared to the negative control group.
- Negative Control Group: The untreated group showed the slowest decrease in wound area among the three groups.

### Effectiveness of *Centella asiatica* extract

- The graph shows that *Centella asiatica* extract is potentially effective in accelerating abrasion wound healing. This can be seen from the faster decrease in wound area in the gotu kola group compared to the positive and negative control groups.
- The visualization of the data on the graph reinforces the notion that *Centella asiatica* has efficacy in accelerating abrasion wound healing. It should be noted that further studies with more controlled methods and larger sample size are still needed to confirm the effectiveness and safety of using *Centella asiatica* as a natural antiseptic.

Based on the results of the research and data analysis that has been conducted, it can be concluded that *Centella asiatica* (gotu kola) extract is potentially effective in accelerating the healing of abrasion wounds on the skin surface. This is shown by:

- Penurunan luas luka yang lebih cepat pada kelompok perlakuan yang diobati dengan ekstrak *Centella asiatica* dibandingkan dengan kelompok kontrol positif (antiseptik komersial) dan kelompok kontrol negatif (tanpa pengobatan).
- The data visualization on the graph shows a more significant trend of wound area reduction in the gotu kola group.

## Potential Utilization

- Centella asiatica (gotu kola) has the potential to be developed as an alternative natural antiseptic in the treatment of abrasion wounds.
- The utilization of Centella asiatica can be an accessible and economical solution, especially in rural areas where this plant grows wild.

## **Suggestions and Recommendations**

- Further Research: Further studies with larger scale and more controlled methods are needed to confirm the effectiveness and safety of using Centella asiatica as an antiseptic.
- Standardization and Formulation: It is necessary to standardize and formulate Centella asiatica extract in appropriate dosage forms (e.g., ointment, cream, or gel) to ensure its quality and effectiveness.
- Education and Socialization: Public education and socialization on the benefits and use of Centella asiatica for wound care needs to be improved.

## **Retrieved from**

This study has limitations, including a limited sample size and simple research methods. The results of this study need to be interpreted with caution and cannot be widely generalized.

## **Hope**

This study can contribute to the development of herbal-based alternative medicine, especially in the treatment of abrasion wounds. The utilization of Centella asiatica is expected to improve public health and provide an alternative treatment that is more accessible and affordable.

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