Effectiveness Of Bidara (*Ziziphus mauritiana*) Extract On The Long Wound Healing In White Rats (*Rattus norvegicus*)

Novida Ariani[1), Umi Kalsum[2), Charlie Angel Maria Marpaung [3)

[1,2,3) Fakultas Kedokteran, Universitas Brawijaya,

Corresponding Author

Email : novidaariani@ub.ac.id

Abstract

Bidara have active compounds which affects in regenerating and repairing the skin's epidermal layer. Examine the benefits of bidara (Ziziphus mauritiana) as a wounds cut treatment on white rats (Rattus Norvegicus). The type of research is quantitative research. Data collection using an observation of the length of wound healing in days and indicators of wound healing. The average wound healing time data was normally distributed and homogeneous with p>0.05. One Way ANOVA resulted p=0.16 means there is no difference between groups. Wound healing indicator data with the Nagaoka scale reached a p>0.05 means the data normally distributed and homogeneous. One Way ANOVA gave a value of p=0.00 means there is significant difference between groups and continued with Post Hoc and T-Test. The comparison of average wound healing time between groups with the intervention of 8% bidara extract ointment, 16%, and 25% influenced by the diversity. The administration of bidara extract ointment can be an alternative in post-incision wound care in obstetrics cases.

Keywords: Wound Cuts, Bidara Leaves, Ziziphus Mauritiana, Wound Healing

INTRODUCTION

The incidence of injuries in Indonesia according to Riskesdas data (2018) recorded that the most common type of injury experienced by the Indonesian population is abrasions with a percentage of 64.1%. In South Sulawesi province, there is 67% prevalence of wounds with the type of lacerations as much as 27.7%, burns 1.3% and the highest prevalence of 66.9% in the incidence of abrasions (Safitri & Munir, 2022). Incision is a condition of trauma to the skin caused by objects on the sharp side such as knives, razor blades, scissors, swords or other sharp objects. Incision wounds are open wounds where exposed skin tissue has the risk of causing bleeding, sympathetic stress response, contamination from bacteria, blood clots, and cell tissue damage (Abdullah, 2022).

The wound recovery process is a physiological thing done by the body when there is damaged or injured tissue. The healing process begins since the occurrence of injury to the tissue and is divided into 4 stages, namely coagulation, inflammation, proliferation, tissue remodeling. Wound healing is influenced by several factors, one of which is wound care patterns (Wallace et al., 2021). Antiseptics that are an alternative to topical wound treatment kill bacteria and have a wider spectrum of antimicrobial activity than antibiotics. WHO guidelines recommend the use of povidone iodine as an antiseptic in wound care (Bigliardi et al., 2017).

Various kinds of herbal plants are commonly used as alternatives in traditional medicine because they have good pharmacological effects and side effects that arise relatively mild compared to synthetic drugs (Wientarsih & Astuti, 2021). The bidara plant (Ziziphus Mauritiana) or also known as Indian Jujube spread throughout the world is known to have a variety of benefits that are often used for treatment. In the bidara plant (Ziziphus Mauritiana) contained various benefits such as vitamins, proteins, magnesium, calcium, iron, and active compounds such as alkaloids, flavonoids, phenols, methyl esters, saponins, carotenoids, phenols, quercetin, terpenoids, and others (Giri et al., 2021). In addition, the content in this plant also has antiviral, antibacterial and antiseptic effects where this has an effect in regenerating and repairing the epidermal layer of the skin (Usman et al., 2021).

Based on this background, researchers want to examine the benefits of bidara leaves (Ziziphus mauritiana) in the health sector, especially the doses needed for the incision wound recovery process carried out on white rats (Rattus Norvegicus).

RESEARCH METHODS

This research uses real experimental methods as research design and Post Test Only Control Group Design as research design. Population of white rats (Rattus Norvegicus) with a sample of 25 individuals divided into each group based on the Federer formula (1991) ((n-1) (k-1) ≥ 15) and the drop out reserve formula (n'=[n/(1-f)]). The inclusion criteria for using samples are white rats, males, body weight 150-200 grams, age 2-3 months, and healthy conditions without defects.

The treatment group in this study was divided into five groups, namely treatment with povidone iodine 10%, vaseline, bidara extract ointment 8%, bidara extract ointment 16%, and bidara extract ointment 25%. The data collection techniques were carried out for 14 days is the length of wound healing in days and indicators of wound healing with the Nagaoka scale through an observation. Data analysis was carried out by using the Microsoft Excel application and data processing through the SPSS application version 25.0.

RESULTS AND DISCUSSION
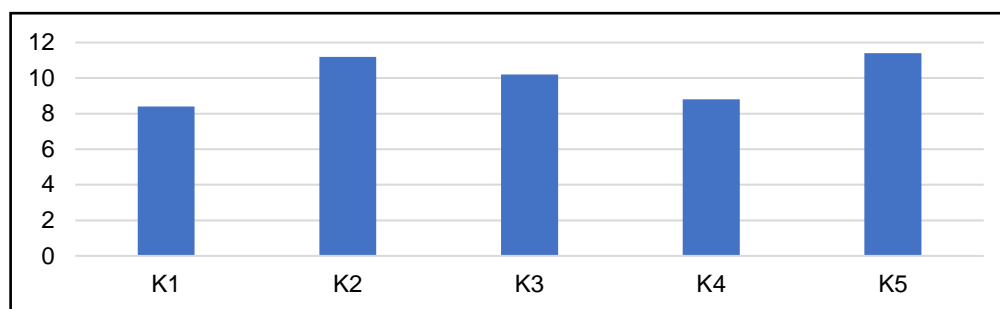
Average Healing Length of Incision Wound

Figure 1. Average Healing Length of Incision Wound

Note:
Group 1 (K1): Povidone iodine intervention 10%
Group 2 (K2): Vaseline intervention
Group 3 (K3): Intervention of 8% bidara extract ointment
Group 4 (K4): Intervention of 16% bidara extract ointment
Group 5 (K5): Intervention of bidara extract ointment 25%

In the 10% povidone iodine group, wounds closed completely at the earliest with an average of 8.4 days. In the vaseline group, wounds closed for an average of 11.2 days. In the 8% bidara extract ointment group, the wound closed for an average of 10.2 days. In the 16% bidara extract ointment group, wounds closed completely the fastest with an average of 8.8 days. In the 25% bidara extract ointment group, wounds closed for an average of 11.4 days.

Average Wound Healing Indicator (Nagaoka Scale)

Table 2. One Way ANOVA test on Average Wound Healing Indicator (Nagaoka Scale)

	F	Sig.
Between Groups	25.766	0.000
Within Groups		
Total		

The data from the analysis of the One Way ANOVA test obtained a p value = 0.000 which is lower than the p-value of 0.05 which means that there is a meaningful comparison of each group.

129

The difference between the average pre-intervention and post-intervention results was 1,086. The value of Sig. (2-tailed) < 0.05 which indicates that the hypothesis (H1) of the study is accepted or the sign is that there is a difference and the table shown Sig. = 0.00 which means a value of < 0.05 or the result is a difference from pre-intervention and post-intervention on the average wound healing indicator. T table is obtained based on the calculation DF = N – K – 1 (24 = 60 – 2 -1) result = 2.38. The calculated t value > t table indicates that the hypothesis (H1) of the study is accepted or the sign that there is an influence of intervention on wound healing indicators. Based on the results, it was concluded that there was an effect of the intervention on the length of incision wounds in white rats.

CONCLUSION

Based on the research results, it was concluded that there was an effect of giving yellow pumpkin pudding (Curcubita moschata) on the quality of sleep in postpartum mothers in the Dinoyo Community Health Center Working Area, Malang. This is proven by the results of the Paired t-test with p-value = 0.000 (p-value <0.05).

REFERENCES

Associations between the mediterranean diet and sleep in older adults: Results from the hellenic longitudinal investigation of aging and diet study. Geriatr Gerontol Int. November 2018;18(11):1543–8.

Badan Pusat Statistik. Rata-rata Konsumsi Perkapita Seminggu Menurut Kelompok Sayur-Sayuran Per Kabupaten/kota (Satuan komoditas), 2020 [Internet]. 2020 [dikutip 1 Februari 2022]. Tersedia pada: https://kedirikota.bps.go.id/

Buntuchai G, Pavadhgul P, Kittipichai W, Satheannoppakao W. Traditional Galactagogue Foods and Their Connection to Human Milk Volume in Thai Breastfeeding Mothers. Journal of Human Lactation. 13 Agustus 2017;33(3):1–8.

Dewi R. Teknik Relaksasi Lima Jari Terhadap Kualitas Tidur, Fatigue dan Nyeri pada Pasien Kanker Payudara. Sleman: Deepublish; 2021. 17–24 hlm.

Fitness n Diet. Amount of Tryptophan in Pumpkin [Internet]. 2022 [dikutip 17 Juni 2022]. Tersedia pada: http://www.dietandfitnesstoday.com/

Haghjoo E, Haghighi KS, Dabaghian FH, Shojaii A, Kenari HM. Efficacy of pumpkin oil (a Persian medicine product) in the treatment of chronic insomnia: A randomized double-blind clinical trial. J Pharm Pharmacogn Res [Internet]. 2019;7(6):471–81. Tersedia pada: http://jppres.com/jppres

Harahap W, Adiyanti MG. KUALITAS TIDUR DAN POLA TIDUR SEBAGAI PREDIPOSISI POSTPARTUM BLUES PADA PRIMIPARA. Jurnal Kesehatan Reproduksi. 2017;4(1):50–5.

Hernianti, Nurlinda A, Sumiaty. Kerupuk Singkong Ebi Biji Labu Kuning terhadap Kualitas Tidur pada Mahasiswa Soppeng. Window of Public Health Journal. 2021;01(04):327–32.

Indryani, Maryani S, Fauziah NA, Sebtalesy CY, Revika E, Hutomo CS, dkk. Keterampilan Dasar Klinik Kebidanan. Warianthos R, editor. Medan: Yayasan Kita Menulis; 2021. 108–123 hlm.

Irwanti D. Menu Rumah Ala @deviirwianti. Jakarta: Demedia Pustaka; 2018. 155 hlm.

Komada Y, Okajima I, Kuwata T. The Effects of Milk and Dairy Products on Sleep: A Systematic Review. Int J Environ Res Public Health. 16 Desember 2020;17(24):9440.

Kurniarum A. Asuhan Kebidanan Persalinan dan Bayi Baru Lahir. Jakarta: Kemenkes RI; 2016.

Kumalasari I. Panduan Praktik Laboratorium dan Klinik Perawatan: Antenatal, Intranatal, Postnatal Bayi Baru Lahir dan Kontrasepsi. Jakarta: Salemba Medika; 2015.

Made N, Sukmawati H, Gede I, Putra SW. RELIABILITAS KUSIONER PITTSBURGH SLEEP QUALITY INDEX (PSQI) VERSI BAHASA INDONESIA DALAM MENGUKUR KUALITAS TIDUR LANSIA. Jurnal Lingkungan & Pembangunan . 2019;3(2):30–8.

Mamalaki E, Anastasiou CA, Ntanasi E, Tsapanou A, Kosmidis MH, Dardiotis E, dkk.

Martínez-Rodríguez A, Rubio-Arias JÁ, Ramos-Campo DJ, Reche-García C, Leyva-Vela B, Nadal-Nicolás Y. Psychological and Sleep Effects of Tryptophan and Magnesium-Enriched Mediterranean Diet in Women with Fibromyalgia. Int J Environ Res Public Health. 26 Maret 2020;17(7).

Mindell JA, Sadeh A, Kwon R, Goh DYT. Cross-Cultural Comparison of Maternal Sleep. Sleep. 1 November 2013;36(11).

Mulyadi E, Kholida N. Buku Ajar Hynocaring. Jakarta: Guepedia; 2021. 179–191 hlm.

Nayak BN, Singh RB, Buttar HS, Corresponding ∗. Role of Tryptophan in Health and Disease: Systematic Review of the Anti-Oxidant, Anti-Inflammation, and Nutritional Aspects of Tryptophan and Its Metabolites. World Heart J. 2019;11(2):161–78.

Ohayon MM, Reynolds CF, Dauvilliers Y. Excessive sleep duration and quality of life. Ann Neurol. Juni 2013;73(6):1699–706.

Rondanelli M, Opizzi A, Monteferrario F, Antoniello N, Manni R, Klersy C. The Effect of Melatonin, Magnesium, and Zinc on Primary Insomnia in Long-Term Care Facility Residents in Italy: A Double-Blind, Placebo-Controlled Clinical Trial. J Am Geriatr Soc. Januari 2011;59(1):82–90.

Sulfianti, Nardina EA, Hutabarat J, Astuti ED, Muyassaroh Y, Yuliani DR, dkk. Asuhan Kebidanan Pada Masa Nifas. Medan: Yayasan Kita Menulis; 2021. 35–56 hlm.

Vargas MA, Bernal C, Martínez R. Protease-assisted process for tryptophan release from pumpkin (Cucurbita maxima) seed protein extracts. J Food Process Preserv. 10 Februari 2022;46(2):e16290.

Wahyuningsih H. Asuhan Kebidanan Nifas dan Menyusui. Jakarta: Kemenkes RI; 2018. 3–96 hlm.