



Use of Radix Scutellariae, Phellodendri Cortex, Rhizoma Coptidis, in Grade II AB Burn Patients with a Surface Area of 8% to 10% at Satiti Prima Husada General Hospital Tulungagung, Indonesia

Purnama DK, Sanyoto WH and Utami AT*

Satiti Prima Husada General Hospital, Tulungagung Regency, Indonesia

Abstract

Background: Severe burns but refuses debridement so an affordable alternative treatment with good results is needed. We report the delivery of a new therapy using MEBO ointment (Radix Scutellariae, Phellodendri Cortex, Rhizoma Coptidis) in pediatric patients with grade 2 A-B burns.

Case Report: Five-year-old girl weighing 16 kg with a diagnosis of Combustio grade 2A-B with a wound area of \pm 8% to 10% due to exposure to hot water 3 days before entering the hospital. It was planned for debridement but refused and was treated using a wound care process, namely washing thoroughly with NaCl 0.9%, after that pouring savlon, then pouring NaCl 0.9% again and next using MEBO ointment, followed by giving sulfratule, wet gauze, dry gauze, then covered with rolled gauze.

Conclusion: MEBO ointment is quite effective in treating burns in children grade 2A-B with a wound area of \pm 8% to 10% due to exposure to hot water without any reported side effects and in a relatively short wound healing time.

Keywords: Herbal Oint; MEBO cream; Burns; Combustio grade 2

OPEN ACCESS

*Correspondence:

Amalia Tri Utami, Satiti Prima Husada General Hospital, Tulungagung Regency, Indonesia,
E-mail: amalia1991@uin-malang.ac.id

Received Date: 06 Feb 2023

Accepted Date: 27 Feb 2023

Published Date: 04 Mar 2023

Citation:

Purnama DK, Sanyoto WH, Utami AT. Use of Radix Scutellariae, Phellodendri Cortex, Rhizoma Coptidis, in Grade II AB Burn Patients with a Surface Area of 8% to 10% at Satiti Prima Husada General Hospital Tulungagung, Indonesia. *J Surg Tech Proced.* 2023; 7(1): 1058.

Copyright © 2023 Utami AT. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Introduction

A burn (Combustio) is a trauma caused by the skin or tissue coming into contact with a heat source, namely electric shock, hot iron, hot water, and hot coals [1]. Trauma that causes burns can occur in everyday life. Burns don't only have a physical impact, but can also have a psychological impact on sufferers. The impact given psychologically such as PTSD (Post Traumatic Stress Disorder) because the incident when experiencing burns can be remembered and the impact of the burn scars can affect the patient's self-confidence [2]. The death rate due to burns according to WHO (World Health Organization) is estimated to reach 11,600 people each year in countries in Southeast Asia [3]. The incidence of burns in Indonesia itself has a prevalence of 1.3% where the province with the highest prevalence is Papua at 2.0%. Meanwhile, the prevalence in East Java is 1.0% [4]. In a study conducted at Cipto Mangunkusumo Hospital (RSCM) the causes of burns include hot water (20.5%), electric shock (10.9%), metal (1%), chemicals (2.7%), unknown causes (1.2%), other causes (4.3%) and mostly caused by fire (59.4%) [5].

Case Presentation

A 5-year-old girl weighing 16 kg who was diagnosed with Combustio grade 2A-B with a wound area of \pm 8% to 10% in the right waist area due to exposure to hot water 3 days before entering the hospital. The patient was planned for debridement but refused due to cost reasons. Then the patient is treated in the room with the following stages using the wound care process, washing thoroughly with NaCl 0.9%, after that pouring savlon, then pouring NaCl 0.9% again and next using MEBO ointment, followed by giving sulfratule, wet gauze, dry gauze, then covered with rolled gauze.

Discussion

Exposure to high-temperature objects that touch the surface of the skin can cause tissue damage and increase tissue permeability, causing tissue edema. Initially, burns have three degrees, degree I (superficial thickness), degree II (partial thickness), degree III (full thickness). However, today there is a new degree, namely degree IV [6]. Burns due to loss of fluid from evaporation of tissue fluid



Figure 1: Steps in the process of giving MEBO cream, followed by giving sufratulle, wet gauze, dry gauze, then cover with rolled gauze.



Figure 2: Before and after 6 days of using MEBO cream.

are called degree I. Damage to skin tissue that reaches the papillary dermis layer so that fluid buildup causes bullae to appear and looks moist is called degree II A, while for degree II B some wounds reach the reticular dermis layer which causes burns. looks dry white [1].

Treatment options for burns I-II A degrees today often use creams such as Silver Sulfadiazine or ointments (ointments) such as MEBO (Moist Exposed Burn Ointment) [7]. The principle of treating burns is to provide a humid atmosphere, healing will take place optimally because it is not exposed directly to the outside environment [8]. MEBO is an ointment with indications for use for I-II degree burns which is made from oil so that it can provide a moist environment to the wound. In MEBO there are several herbal plants such as sesame oil, beeswax, Cera flava, and Rhizoma coptidis which contain beta-sitosterol, berberine, sesamin, and sesamol from sesame oil [9]. The content of beta-sitosterol functions as an anti-inflammatory [10]. MEBO also contains berberine which functions as an antioxidant [11]. The content of sesamin and sesamol in sesame oil can increase the amount of collagen [12]. The details of the contents of MEBO ointment are as follows:

Beta-sitosterol

The beta-sitosterol compound is a group of phytosterols which functions as an anti-inflammatory [13]. Beta-sitosterol compounds are often found in Rhizoma coptidis plants [9]. The way beta-sitosterol works is by inhibiting pro-inflammatory mediators such as TNF- α and mast cells so that histamine release in mast cells decreases

[10]. The beta sitosterol mechanism also inhibits prostaglandins from mast cells so that prolonged inflammation does not occur [10].

Berberine

Excessive increase in free radicals will cause oxidative stress. Under conditions of oxidative stress, the tissue will undergo apoptosis due to an increase in free radicals which inhibit oxygen perfusion to the wound tissue. Free radicals can inhibit the migration and aggregation of inflammatory factors which slow down the wound healing process [14]. Many berberine compounds are found in Rhizoma coptidis and Cortex Phellodendri which function as antioxidants [9].

The mechanism of berberine acts as an antioxidant by increasing the synthesis of Superoxide Dismutase (SOD) which functions to capture free radicals in the tissues so that oxygen perfusion to the tissues is not hampered [15]. Another mechanism of berberine is by inhibiting dinucleotide phosphate (NADPH) reductase, an enzyme that oxidizes and produces free radicals [16].

Sesamin and sesamol (sesame oil)

The content of sesamine and sesamol and moisture in sesame oil can increase the migration of fibroblasts and collagen to the wound site. The mechanism of sesamin and sesamol is by reducing the activity of the Matrix Metalloproteinase 12 (MMP-12) enzyme which inhibits the migration of fibroblasts and collagen [12]. The MMP-12 enzyme can also degrade collagen which is formed in the epithelial regeneration phase so that collagen tissue is not formed. The mechanism of sesamin compounds increases collagen by inducing COA1A2 mRNA, a gene that functions to synthesize type I collagen [17].

Conclusion

Moist Exposure Burn Ointment (MEBO) is an oil-based herbal paste that is said to be efficacious and inexpensive in treating burns, especially in Indonesia. MEBO is a topical burn remedy in the form of an ointment. MEBO is an herbal medicine with the main bioactive ingredients such as beta-sitosterol and berberine which function in the wound healing process in the inflammatory phase to re-epithelialization. MEBO topically on second degree burns can increase collagen formation, so that it can accelerate the wound healing process.

References

- Garcia-Espinoza J, Aguilar-Aragon V, Ortiz-Villalobos E, Garcia-Manzano R, Antonio B. 'Burns: Definition, classification, pathophysiology and initial approach'. *Gen Med Open Access*. 2017;5(5).
- Brunner LS, Smeltzer SC, Suddarth DS. *Brunner & Suddarth's Textbook of Medical-Surgical Nursing*; Vol. 1. Language. 2010;27:1114-2240.
- Mehta K, Arega H, Smith NL, Li K, Gause E, Lee J, et al. Gender-based disparities in burn injuries, care and outcomes: A World Health Organization (WHO) Global Burn Registry cohort study. *Am J Surg*. 2022;223(1):157-63.
- Riset Kesehatan Dasar. *Badan Penelitian dan Pengembangan Kesehatan Kementerian RI year 2018*.
- Yudhanarko Y, Suwarman S, Aditya R. Evaluasi Kepatuhan Pelaksanaan Standar Prosedur Operasional Manajemen Nyeri pada Pasien Luka Bakar di RSUD Dr. Hasan Sadikin Bandung. *J Anestesi Perioperatif*. 2019;7(2):92-9.
- Shiffman MA, Low M, editors. *Pressure injury, diabetes and negative pressure wound therapy*. Springer; 2020.

7. Mahomoodally F, Samoisy AK, Suroowan S. Ethnozoological practices in Rodrigues Island of the Mascarene archipelago. *J Ethnopharmacol.* 2019;245:112163.
8. Bakker A, Van Loey NE, Van der Heijden PG, Van Son MJ. Acute stress reactions in couples after a burn event to their young child. *J Pediatr Psychol.* 2012;37(10):1127-35.
9. Elgohary HM, Al Jaouni SK, Selim SA. Effect of ultrasound-enhanced *Nigella sativa* seeds oil on wound healing: An animal model. *J Taibah Univ Med Sci.* 2018;13(5):438-43.
10. Pei J, Prasad M, Mohamed Helal G, El-Sherbiny M, Abdelmonem Elsherbiny DM, Rajagopal P, et al. Beta-Sitosterol facilitates GLUT4 vesicle fusion on the plasma membrane *via* the activation of Rab/IRAP/Munc 18 signaling pathways in diabetic gastrocnemius muscle of adult male rats. *Bioinorg Chem Appl.* 2022;2022.
11. Eissa LA, Kenawy HI, El-Karef A, Elsherbiny NM, El-Mihi KA. Antioxidant and anti-inflammatory activities of berberine attenuate hepatic fibrosis induced by thioacetamide injection in rats. *Chem Biol Interact.* 2018;294:91-100.
12. Kugo H, Miyamoto C, Sawaragi A, Hoshino K, Hamatani Y, Matsumura S, et al. Sesame extract attenuates the degradation of collagen and elastin fibers in the vascular walls of nicotine-administered mice. *J Oleo Sci.* 2019;68(1):79-85.
13. Raket D. *The compassionate connection: The healing power of empathy and mindful listening.* WW Norton & Company; 2018.
14. Ruhee RT, Ma S, Suzuki K. Protective effects of sulforaphane on exercise-induced organ damage *via* inducing antioxidant defense responses. *Antioxidants.* 2020;9(2):136.
15. Chaves GV, Pereira SE, Saboya CJ, Spitz D, Rodrigues CS, Ramalho A. Association between liver vitamin A reserves and severity of nonalcoholic fatty liver disease in the class III obese following bariatric surgery. *Obes Surg.* 2014;24:219-24.
16. Paul M, Hemshekhar M, Kemparaju K, Girish KS. Berberine mitigates high glucose-potentiated platelet aggregation and apoptosis by modulating aldose reductase and NADPH oxidase activity. *Free Radic Biol Med.* 2019;130:196-205.
17. Lin TY, Wu PY, Hou CW, Chien TY, Chang QX, Wen KC, et al. Protective effects of sesamin against UVB-induced skin inflammation and photodamage *in vitro* and *in vivo*. *Biomolecules.* 2019;9(9):479.